

















THE CANADIAN AGRICULTURAL

REPORT FOR THE YEAR 1880

THE BOARD OF AGRICULTURE

OTTAWA, CANADA

PUBLISHED ANNUALLY


BY THE CANADIAN AGRICULTURAL BOARD

1881

TORONTO:

PRINTED BY THE CANADIAN AGRICULTURAL BOARD





Digitized by the Internet Archive  
in 2024 with funding from  
University of Toronto



P  
Agriculture  
C

THE

CANADIAN AGRICULTURIST,

11

AND

Journal and Transactions

OF

THE BOARD OF AGRICULTURE

OF

UPPER CANADA.

~~~~~  
PUBLISHED SEMI-MONTHLY,

AND DEVOTED TO

Agriculture, Horticulture, Science, and Domestic Economy.

~~~~~  
VOL. XIV, 1862.  
~~~~~

481107  
11. 11. 48

TORONTO:

PRINTED AND PUBLISHED FOR THE BOARD OF AGRICULTURE,  
AT THE GUARDIAN PRINTING ESTABLISHMENT, KING STREET EAST.  
1862.





# INDEX.

|                                                                                       | PAGE.    |                                                           | PAGE.         |
|---------------------------------------------------------------------------------------|----------|-----------------------------------------------------------|---------------|
| Adulteration of Articles subject to Duty,                                             | 124      | Board of Agriculture, Meetings of the,                    | 76, 452       |
| Aeration of Soil, On the,.....                                                        | 299      | “ “ Members elected 1862,                                 | 97            |
| Agricultural Exhibitions, On Permanently<br>locating .....                            | 1        | Bone Manure, Home made,.....                              | 14            |
| Agricultural Statute, Public Meeting in<br>reference to,.....                         | 477      | Bones, An easy way to dissolve,.....                      | 58            |
| Agricultural Societies, The Early History<br>of, .....                                | 65       | Bones, Diseases of,—Splints.....                          | 375           |
| Agricultural Association, Winter Meeting<br>“ “ Annual Meeting                        | 77       | Bones, The best way to dispose of.....                    | 441           |
| Agricultural Hall, Toronto.....                                                       | 597      | Botanical Society, of Kingston.....                       | 86, 389       |
| Agricultural Act, Draft of proposed<br>Amendments to,.....                            | 131      | Bots in Horses.....                                       | 311           |
| Agriculture in the West, The Course of,...                                            | 168      | British Reviews, The,.....                                | 189, 574, 734 |
| Agriculture, Minister of, Report for 1861                                             | 228      | Burns, the Poet, Anecdote of,.....                        | 535           |
| Agriculture, Sir E. B. Lytton on,.....                                                | 355      | Butter, On making,.....                                   | 46, 87        |
| Agriculture College Bill, U. S.,.....                                                 | 688      | Butter and Cheese,.....                                   | 248           |
| <i>Agriculturist</i> , Subscription Prizes for.....                                   | 433      | Butter Making, Hints on the Art of,.....                  | 373           |
| <i>Agriculturist</i> , The new arrangements for<br>1863,.....                         | 383      | Butter, How to make good,.....                            | 633           |
| Alderney or Jersey Cow, The,.....                                                     | 737      | Butter, Cuthbert Johnson on,.....                         | 437           |
| Alsike Clover.....                                                                    | 225      | Calves, Rearing on Milk and Linseed Meal                  | 329           |
| Animals, Importation of, for Breeding,...                                             | 145, 227 | Cameron, Professor, Lecture by,.....                      | 527           |
| Apple Barrel, Ventilation of the,.....                                                | 44       | Canadian Department, International Ex-<br>hibition, ..... | 424, 451      |
| Apples, A new use for,.....                                                           | 25       | Carrot, The Early Short Horn,.....                        | 305           |
| Apple Trees at Montreal, On the failure of,<br>Apple Tree Borer, The,.....            | 27       | Cattle Disease in Wales.....                              | 55            |
| Army Worm, The,.....                                                                  | 217      | Cattle, Judging of,.....                                  | 85            |
| Arts and Manufactures, Journal of the<br>Board of,.....                               | 401      | Cattle, Evil effects of pampering,.....                   | 245           |
| Artificial Cattle Foods, Real value of,...                                            | 396      | Celery, Keeping, in Winter.....                           | 185           |
| Artificial Hoofs for Horses.....                                                      | 61       | Census, the Agricultural.....                             | 491           |
| Artificial Manures, Commercial value of, 691,                                         | 75       | Census of Upper Canada, Facts from the.                   | 627           |
| Asparagus, The Culture of.....                                                        | 413      | Cerealia, The, a standing miracle.....                    | 89            |
| Atmosphere, Changes of the,.....                                                      | 741      | Cereals, Selection of the seeds of,.....                  | 659           |
| Atmosphere, The; and the Soil,.....                                                   | 112      | Chaff, To remove from animals' eyes.....                  | 26            |
| Australian Farming.....                                                               | 179      | Cheese, On making .....                                   | 48, 307       |
| Autumn Agricultural Shows, 505, 520, 559,                                             | 516      | Cheddar cheese.....                                       | 249, 346      |
| Ayrshire Cows, Milk and Butter from,.....                                             | 654      | Cheese dairying, Its permanency & profit.                 | 567           |
|                                                                                       | 437      | Chemistry, Application of to Agriculture                  | 676, 738      |
| Bean, Cultivation of the White,.....                                                  | 303      | Chicory, Preparation of .....                             | 50            |
| Bean, Field, The, and Rotation of Crops.                                              | 610      | Chinese, The, What they eat .....                         | 26            |
| Beavers, Habits of, .....                                                             | 21       | Chinese sugar cane.....                                   | 549           |
| Bee Hives, to keep Ants away from,.....                                               | 220      | Clear starching, Hints for.....                           | 185           |
| Bee Pastures.....                                                                     | 310      | Climate, What influences our.....                         | 25            |
| Bee Hives, Fumigating Comb in,.....                                                   | 347      | Close of the year.....                                    | 737           |
| Bees, On Wintering,.....                                                              | 21       | Coal ashes and Cinders as manure.....                     | 395           |
| Bees, On the management of,.....                                                      | 53       | Coffee substitutes .....                                  | 436           |
| Bees, Foul brood in,.....                                                             | 634      | Colorado Territory, Agriculture of .....                  | 656           |
| Berberries for Hedges.....                                                            | 242      | Colts, Training young .....                               | 712           |
| Birch, The—Its Varieties and Uses.....                                                | 565      | Concrete Houses.....                                      | 537           |
| Birds, Importance of, to Growing Crops...<br>Birds, Wanton destruction of small,..... | 100      | Condiments.....                                           | 259, 442      |
| Birmingham Cattle Show, December, 1861                                                | 382      | Corn, Ill effects of bad.....                             | 363           |
| Black Wart in Cherry Trees.....                                                       | 13       | Correspondents wanted .....                               | 39            |
| Black Knot, The,.....                                                                 | 434      | Cotton, The silk weed.....                                | 390           |
| Bleeding, To stop,.....                                                               | 472      | Cows, Health of.....                                      | 19            |
| Blistered Feet, Remedy for,.....                                                      | 29       | Cows, Poor milkers dry up.....                            | 19            |
|                                                                                       | 25       | Crops, The, and the season.....                           | 387           |
|                                                                                       |          | Dairy Management .....                                    | 2, 46, 292    |
|                                                                                       |          | Dairy Stock, Epidemic among .....                         | 250           |
|                                                                                       |          | Dairy Stock, Management of .....                          | 609           |
|                                                                                       |          | Dinner and Speeches at Provincial Exhi-<br>bition.....    | 589           |



|                                                                                     |                    |                                                                 |               |
|-------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------|---------------|
| Diseased meat, Dr. Letheby on.....                                                  | 327                | Fruit Growers' Society of Western New York .....                | 219           |
| Dog, How to treat the bite of a .....                                               | 60                 | Fruit Growers, Interesting to.....                              | 563           |
| Dogs, Management of .....                                                           | 315                | Fruit Growing, Profits of.....                                  | 436           |
| Domestic Recipes,.....50, 407, 436, 507,                                            | 566                | Fruit Prospects and Birds.....                                  | 564           |
| Double Flowers, Growing.....                                                        | 405                | Fruits, List of, recommended by Fruit Growers' Association..... | 106           |
| Draught Stallions and their selection... 442                                        |                    | Fruits, Report of Massachusetts Horticultural Society on.....   | 115           |
| Drainage Plough, A new.....                                                         | 84                 | Fruits, Thinning of .....                                       | 713           |
| Draining and ashes .....                                                            | 609                | Fruit Trees, Taking up,.....                                    | 18            |
| Durham East Agricultural Society.....                                               | 83                 | Fruit Trees in the West.....                                    | 404           |
| Dwarf Apple Trees.....45, 113, 345,                                                 | 562                | Fruit Trees, Advice on Planting, ....                           | 469, 631      |
| Dwarf Standard Fruit Trees .....                                                    | 181                | Fruit Trees, Remarks on Planting and Culture of.....            | 695           |
| Earth, Internal heat of the.....                                                    | 30                 | Galloway and Angus Cattle, On showing,                          | 485           |
| Earth Worm, The, its use.....                                                       | 333                | Gardens, Cottage and Farm.....                                  | 372           |
| EDITORIAL NOTICES (See last pages of each No.)                                      |                    | Garden, Hydropathy in the.....                                  | 428           |
| Eggs, On packing for long journeys.....                                             | 308                | Gladeolus, The.....                                             | 666           |
| Elodea Canadensis .....                                                             | 65                 | Gloucester Cheese .....                                         | 249           |
| England, Letter from a Canadian in .....                                            | 482                | Goats, About keeping .....                                      | 413           |
| English Agriculture .....                                                           | 297                | Governor General's visit to Provincial Exhibition .....         | 588           |
| Ewes, Mortality amongst.....                                                        | 377                | Grafting Fruit Trees.....                                       | 305           |
| Fallow, The Autumnal.....                                                           | 624                | Grafting, Late.....                                             | 530           |
| Farm Horse, How to choose a.....                                                    | 251                | Grain Aphid, The .....                                          | 514, 546      |
| Farm, The, A chemical manufactory.....                                              | 257                | Grape, Chasselas, Vibert .....                                  | 17            |
| Farm Capital .....                                                                  | 647                | Grapes, Concord vs. Delaware .....                              | 18            |
| Farmer, The, As an observer.....                                                    | 237                | Grape vines, Mode of planting .....                             | 715           |
| Farmers' News, Weed seeds.....                                                      | 29                 | Grasses, Nature of.....                                         | 102           |
| Farming in Devonshire, 1861 and 1900 ... 125                                        |                    | Grasses, Manures for.....                                       | 332           |
| Fattening Animals, Effects of cold on ... 45                                        |                    | Grazing .....                                                   | 502           |
| Fat, use of .....                                                                   | 252                | Green crops Shade the Soil .....                                | 501           |
| Fattening, Choice of Animals for.....                                               | 476                |                                                                 |               |
| Fat versus Lean, System of feeding cattle. 616                                      |                    |                                                                 |               |
| Fergusson, The late Hon. Adam, death of, 638                                        |                    |                                                                 |               |
| Fibre Plant, A new.....                                                             | 389                |                                                                 |               |
| Figs, Raising at the North.....                                                     | 17                 |                                                                 |               |
| Fire arms, How to handle safely.....                                                | 25                 |                                                                 |               |
| Fish, Localities of .....                                                           | 29                 |                                                                 |               |
| Flax culture.....60, 98, 242, 291                                                   |                    |                                                                 |               |
| Flax Scutching machines.....99, 204                                                 |                    |                                                                 |               |
| Flax, The cultivation and preparation of .....                                      | 161, 193, 324, 618 |                                                                 |               |
| Flax Association, Elgin.....                                                        | 167                |                                                                 |               |
| Flax, Cultivation of in Canada.. ..                                                 | 334                |                                                                 |               |
| Florists' Flowers, .....                                                            | 434                |                                                                 |               |
| Flower Beds and Bedding Plants.....                                                 | 246                |                                                                 |               |
| Flower Garden and Pleasure Grounds... 743                                           |                    |                                                                 |               |
| Flowers, Effects of a taste for.....                                                | 507                |                                                                 |               |
| Folding on Meadows .....                                                            | 103                |                                                                 |               |
| Foliage Plants, On.....                                                             | 262                |                                                                 |               |
| Food, Comminuted .....                                                              | 101                |                                                                 |               |
| Food for Cattle, Preparation of .....                                               | 358                |                                                                 |               |
| Food, the value of.....                                                             | 653                |                                                                 |               |
| Forced Plants, Ventilation of.....                                                  | 185                |                                                                 |               |
| Forest Trees, Preserving of.....                                                    | 446                |                                                                 |               |
| Forests, Their importance.....                                                      | 497                |                                                                 |               |
| Fowls, Impaction of the crop in.....                                                | 20                 |                                                                 |               |
| Fowls, On the ailments of.....                                                      | 374                |                                                                 |               |
| Fowls, Hints to Keepers.....                                                        | 414                |                                                                 |               |
| Fowls, Lice in.....                                                                 | 582                |                                                                 |               |
| French Merino Sheep, Importation of.... 367                                         |                    |                                                                 |               |
| Fruit Culture in Orchard Houses .....                                               | 148                |                                                                 |               |
| Fruit Growers' Association of Upper Canada, Meetings of,.....97, 104, 401, 465, 692 |                    |                                                                 |               |
| Do. do. Annual Address of the President, .....                                      | 139                |                                                                 |               |
| Do. do. Series of Questions circulated by.....                                      | 111, 147           |                                                                 |               |
|                                                                                     |                    | Hamilton Horticultural Society, Spring Show .....               | 345, 368      |
|                                                                                     |                    | Do do do 2nd Show .....                                         | 464           |
|                                                                                     |                    | Do do do 3rd Show .....                                         | 631           |
|                                                                                     |                    | Hamilton Township, Report of .....                              | 393, 421, 488 |
|                                                                                     |                    | Hay, To avoid running out of .....                              | 75            |
|                                                                                     |                    | Hemp plant, Products of the .....                               | 69            |
|                                                                                     |                    | Hens, Something about .....                                     | 149           |
|                                                                                     |                    | Hens, How to make Profitable.....                               | 309           |
|                                                                                     |                    | Hennery, A profitable .....                                     | 531           |
|                                                                                     |                    | Herefords, Late Lord Berwick's Sale of... 14                    |               |
|                                                                                     |                    | Highlands, The Scottish.....                                    | 679           |
|                                                                                     |                    | Hoeing, Uses of .....                                           | 14            |
|                                                                                     |                    | Hogs among Fruit Trees, Benefit of.... 304                      |               |
|                                                                                     |                    | Hogs, Cheap summer food for.....                                | 400           |
|                                                                                     |                    | Hogs, Dry food for.....                                         | 703           |
|                                                                                     |                    | Horse, Cure for a jibing .....                                  | 413           |
|                                                                                     |                    | Horse, How to put in condition.....                             | 667           |
|                                                                                     |                    | Horse Hair, The.....                                            | 315           |
|                                                                                     |                    | Horses, To prevent flies from teasing ... 25                    |               |
|                                                                                     |                    | Horses, Warranty of soundness in.....                           | 300           |
|                                                                                     |                    | Horses, Sore Shins in .....                                     | 410           |
|                                                                                     |                    | Horses' Hoofs, Repairing the loss of.... 410                    |               |
|                                                                                     |                    | Horses we need, What.....                                       | 475           |
|                                                                                     |                    | Horses, Breeding, The influence of the Sire and Dam .....       | 558           |
|                                                                                     |                    | Horses, Bowed Legs or sprung knees in.. 568                     |               |
|                                                                                     |                    | Hungarian Grass .....                                           | 368           |
|                                                                                     |                    | Hunters, their Riders and Breeders.....                         | 509           |
|                                                                                     |                    | Huron County, The season in.....                                | 42            |
|                                                                                     |                    | Hyacinth, The.....                                              | 664           |



|                                                                        |          |                                                                                                                                     |          |
|------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------|----------|
| Iceland, Natural Fountains in .....                                    | 26       | Miscellaneous Extracts, 21, 57, 89, 118, 157, 186,<br>252, 283, 315, 349, 378, 413, 444, 476, 535,<br>569, 635, 669, 701, 731, 757. |          |
| Ice-Houses .....                                                       | 706      | Natural Food, <i>vs</i> Medicine.....                                                                                               | 431      |
| Importation of Live Stock.....                                         | 304, 432 | Natural History, Collection of.....                                                                                                 | 283      |
| Indoor Gardening.....                                                  | 407      | Nature, Influence of.....                                                                                                           | 757      |
| Inflammation in Animals.....                                           | 116, 312 | New Brunswick Board of Agriculture,..                                                                                               | 223      |
| Insects, Letter from Dr. Fitch on.....                                 | 137      | New York State Agricultural Show.....                                                                                               | 611      |
| Instruction, Agricultural and Veterinary.                              | 705      | Niagara Township, Fruit Prospects in,..                                                                                             | 216      |
| International Exhibition, 66, 322, 363, 387<br>391, 418, 448, 458, 481 |          | Norman Horse, History of the.....                                                                                                   | 447      |
| International Exhibition, The British Col-<br>onies at.....            | 495      | Northwards, Farming Prospects.....                                                                                                  | 484      |
| Irrigation for Grass Lands.....                                        | 426      | Nova Scotia, Agricultural Productions of,                                                                                           | 368      |
| Irrigation, Letter and remarks on .....                                | 513      | November, Hints for.....                                                                                                            | 640      |
| Japan Lilies .....                                                     | 242      | Oats, Advantages of Crushing.....                                                                                                   | 44       |
| Japan, Coniferous Plants of.....                                       | 472      | Oil Spring, A great.....                                                                                                            | 157      |
| Jordan, Bathing in the.....                                            | 28       | Onion Culture in Massachusetts.....                                                                                                 | 372      |
| Judging Stock, Provincial Exhibition....                               | 559      | Orchards, On the Decay of.....                                                                                                      | 370      |
| June Berry, as a Pear Stock, The.....                                  | 435      | Orchards, Care of Trees in.....                                                                                                     | 471      |
| Kerry Cattle.....                                                      | 661      | Orchards, Decayed.....                                                                                                              | 564      |
| Kicking Horses, How to cure.....                                       | 380      | Osier Willow.....                                                                                                                   | 136      |
| Kohl Rabi .....                                                        | 228      | Pansey, The.....                                                                                                                    | 435      |
| Laborer The, on the Continent.....                                     | 26       | Paraffine, or Coal Oils.....                                                                                                        | 444      |
| Lake Superior Region.....                                              | 689      | Parsnip, The.....                                                                                                                   | 180      |
| Land Drainage.....                                                     | 33       | Parsnip, On obtaining a New and Superior,                                                                                           | 16       |
| Land Drainage in Essex, Necessity of,..                                | 396      | Patents of Invention.....                                                                                                           | 40, 146  |
| Lark, The, and her Young.....                                          | 22       | Peach, Vessiers and Early Victoria.....                                                                                             | 17       |
| Leached Ashes as Manure.....                                           | 38       | Peach Trees, Renewing.....                                                                                                          | 405      |
| Leather, Substitute for.....                                           | 285      | Pear, New Seedling, and British Queen..                                                                                             | 17       |
| Leather Cloth, Manufacture of.....                                     | 569      | Peas Sown with Potatoes.....                                                                                                        | 189      |
| Leaves, Use of.....                                                    | 657      | Peterborough Horticultural Society..                                                                                                | 114, 697 |
| Leicester Sheep, Mr. Sanday's sale of,..                               | 661      | Petroleum, Historical and Scientific Facts<br>about.....                                                                            | 154      |
| Life, The Conditions of.....                                           | 26       | Pig, Diseases of the.....                                                                                                           | 153      |
| Light Underground, More.....                                           | 499      | Pig Breeding and Feeding.....                                                                                                       | 362      |
| Light in Plants.....                                                   | 663      | Pigs, Italian.....                                                                                                                  | 181      |
| Liquid Manure Farming, Scotland.....                                   | 360      | Pigs, Rearing and Breeding.....                                                                                                     | 515      |
| Live Stock, Care and Food of.....                                      | 35       | Piggeries, On the Construction of.....                                                                                              | 709      |
| Live Stock in France, Management of,..                                 | 240      | Plants and Animals, Analogy between...                                                                                              | 141      |
| Lock, Mr. W. H., Removal of.....                                       | 216      | Plaster, with Manure.....                                                                                                           | 259      |
| Lower Canada Provincial Exhibition.....                                | 627      | Pleuro Pneumonia, 186, 239, 348, 411, 473,                                                                                          | 700.     |
| Mangel Wurzel, Cultivation of.....                                     | 292      | Ploughing a man in .....                                                                                                            | 22       |
| Manures, Experiments on.....                                           | 136      | Plums, Cultivation of .....                                                                                                         | 45       |
| Manures, Economy in Saving.....                                        | 427      | Poissy, Fat Stock International Show at..                                                                                           | 337      |
| Manures, Adulteration of, in France.....                               | 433      | Poorhouse Farm in Ireland, Profits on a..                                                                                           | 12       |
| Manures, How to Value.....                                             | 504      | Potato Disease, The .....                                                                                                           | 14, 138  |
| Manuring on the Surface.....                                           | 430      | Potatos, Cutting Seed .....                                                                                                         | 180      |
| Maple Sugar.....                                                       | 133      | Poultry, On Cramming.....                                                                                                           | 20       |
| Mare, The Brood.....                                                   | 375      | Poultry keeping, Profitable.....                                                                                                    | 51       |
| Meadows and Pastures, Professor Buck-<br>man on.....                   | 102      | Poultry, On breeding and feeding .....                                                                                              | 51, 88   |
| Meat, How Salt and Salt-petre act on,...                               | 23       | Poultry, Fattening .....                                                                                                            | 508      |
| Medical Hints.....                                                     | 60       | Poultry and its products... ..                                                                                                      | 532      |
| Meetings in Agricultural Hall, Exhibition<br>week .....                | 595      | Poultry Dung, as Manure .....                                                                                                       | 673      |
| Melons, Culture of.....                                                | 307      | Prince Consort, Death of the late.....                                                                                              | 3        |
| Memory, Pictures from.....                                             | 445      | Prince Consort, The late, and the Poet<br>Laureate.....                                                                             | 158      |
| Mice, Trees injured by.....                                            | 261      | Provincial Exhibition, Preparations for,<br>132, 321, 478, 545,                                                                     |          |
| Microscopic Age, A.....                                                | 27       | Do .....                                                                                                                            | 236      |
| Michigan State Fair.....                                               | 660      | Do .....                                                                                                                            | 266      |
| Mignonette as a Tree.....                                              | 471      | Do .....                                                                                                                            | 318      |
| Milch Cows, Kindness to.....                                           | 19       | Do .....                                                                                                                            | 577      |
| Milch Cows, Relative value of land for..                               | 349      | Do .....                                                                                                                            | 601      |
| Milch Cows, Pastures for.....                                          | 626      | Do .....                                                                                                                            | 603      |
| Milk, The Composition of.....                                          | 204, 230 | Do .....                                                                                                                            | 717, 744 |
| Milk Farm, Josiah Quincey's.....                                       | 698      |                                                                                                                                     |          |

|                                                            | PAGE.    |                                            | PAGE.              |
|------------------------------------------------------------|----------|--------------------------------------------|--------------------|
| Queen, The, Address of Condolence to...                    | 97       | Snow, The .....                            | 253                |
| Do do, Reply of, to Address.....                           | 332      | Soap, Receipts for making.....             | 409, 436           |
|                                                            |          | Soiling Milch Cows .....                   | 400                |
| Rabies in a Horse.....                                     | 534      | Sorghum Sugar .....                        | 44                 |
| Radish, The, as a Field Crop .....                         | 628      | Southdowns, Great Sale of at Babraham..    | 505                |
| Rain, Ammonia in.....                                      | 121      | Spanish Fowls.....                         | 87                 |
| Rain Water, A drop of.....                                 | 554      | Species, The permanence of.....            | 477                |
| Ram Lettings, Recent English .....                         | 15       | Spring Shows, 1862 .....                   | 147, 181, 215, 242 |
| Raspberries.....                                           | 373      | Steam Ploughing .....                      | 28                 |
| Rats, A Novel Trap for.....                                | 410      | Steam Cultivation, Rise and Progress of..  | 209                |
| Red Clover, Different manures for.....                     | 34       | Steam Cultivation, The three systems of.   | 493                |
| Rhubarb, A Spring Tart .....                               | 184      | Steam Cultivation at Woolston.....         | 621                |
| Rhubarb Wine, Receipt for.....                             | 733      | Steam Cultivation, Mr. Fowler's System of  | 623                |
| Riband Border Flowers.....                                 | 405      | Stock, On Feeding .....                    | 40, 66, 71         |
| Ring-Worm, Remedy for.....                                 | 285      | Stock, Sale of at Guelph.....              | 630                |
| Roots, How to feed out.....                                | 142      | Stone, Preservation of.....                | 22                 |
| Roots, Consumption of .....                                | 243      | Strawberry, Keen's Seedling .....          | 17                 |
| Roses, The new French.....                                 | 86       | Strawberry culture.....                    | 405                |
| Rose, The .....                                            | 346      | Straws of the Cereals, Feeding value of..  | 233                |
| Rose, The ever blooming.....                               | 714      | Straw as Food.....                         | 295, 330, 622      |
| Rot in Cattle .....                                        | 629      | Sun, Constitution of the .....             | 28                 |
| Royal Dublin Society, Winter Show of the                   | 10       | Sunset in the Highlands.....               | 125                |
| Royal Farms, The .....                                     | 143, 243 | Sunset among the Icebergs.....             | 316                |
| Royal Dublin Society, Spring Show of the                   | 341      | Swedish Turnip, The.....                   | 289                |
| Royal Agricultural Society's Show, Eng-<br>land .....      | 454      | Sweden, The Agriculture of.....            | 648                |
| Royal Agricultural Society of Ireland,<br>Show of the..... | 520      | Table turning 1,500 years ago.....         | 758                |
| Runaway Horses, A new check for.....                       | 412      | Tanners' Bark, As a Manure.....            | 354                |
|                                                            |          | Temperature of the Soil .....              | 658                |
| Sandy Soils, To improve .....                              | 433      | Thorndale Short Horn Blood.....            | 692                |
| Scab in Sheep.....                                         | 314      | Toronto Horticultural Society, Spring Show | 343                |
| Scientific Jottings .....                                  | 93       | Do do Second Show.....                     | 462                |
| Sea, Light in the .....                                    | 27       | Do do Third Show.....                      | 562                |
| Sea-Weed as a Manure .....                                 | 366      | Town Sewage.....                           | 652                |
| Seeds, Adulteration of.....                                | 36       | Transplanting Trees, Old Notions.....      | 708                |
| Seeds, The germination of .....                            | 130      | Trees, for winter.....                     | 18                 |
| Seed Stores, Why you curse the .....                       | 541      | Tree Wounds.....                           | 184                |
| Sewage Meadows, Edinburgh.....                             | 397      | Trees, Deep Planting of .....              | 247                |
| Sewage Irrigation .....                                    | 684      | Trees and Rain.....                        | 371                |
| Sheep, Winter management of.....                           | 6        | Turkeys, On Fattening .....                | 20                 |
| Sheep, Rot in.....                                         | 213      | Turnip Culture .....                       | 355                |
| Sheep, The Lonk, at Royal Agricultural<br>Show .....       | 245      | Turnip Fly, Remedy for the.....            | 291, 386           |
| Sheep in England, Malignant disease.<br>among .....        | 560      | Tweedside, The Long Woolled Sheep of..     | 681                |
| Sheep, Experiment with different breeds of                 | 645      | Umbilical Hernia .....                     | 533                |
| Sheep Ticks, Tobacco for.....                              | 29       | Vegetables, Criterion of fine.....         | 506                |
| Sheep Experiment, An interesting.....                      | 126      | Veterinary Science, The Progress of.....   | 150                |
| Shepherds, European.....                                   | 15       | Veterinary Progress.....                   | 701                |
| Short Horns, Exportation of, to England.                   | 486      | Veterinary Instruction.....                | 705                |
| Short Horn Cow, The points of a.....                       | 573      | Vice, versus Labor .....                   | 674                |
| Short Horn Breeding.....                                   | 619      | Victoria Falls, in Africa.....             | 24                 |
| Short Horns in France.....                                 | 429      | Vine, The, Culture of in the open air....  | 182                |
| Short Horns as Show Stock.....                             | 643      |                                            |                    |
| Shropshire Sheep, Great annual Sale of..                   | 560      | Wages in Scotland and Ireland.....         | 365                |
| Silk Weed, the Rocky Mountain .....                        | 486      | Warts on Cattle .....                      | 50                 |
| Sleep, We take too little .....                            | 23       | Water, the best drink for Soldiers.....    | 65                 |
| Sleeplessness, A remedy for.....                           | 28       | Wax and Honey .....                        | 635                |
| Sleep, Importance of .....                                 | 476      | Weather, Sudden Cold.....                  | 23                 |
| Small Pox in Sheep .....                                   | 716      | Weather and Crops, 1862.....               | 322                |
| Smithfield Fat Cattle Show .....                           | 7        | Weedy Neighbors.....                       | 657                |
| Smithfield, Reminiscences of .....                         | 94       | Welland County Agricultural Society....    | 83                 |
| Smoke-House, A good.....                                   | 59       | Welsh Pony, The.....                       | 118                |
| Smoke-Houses, How to build.....                            | 123      | West, The, Fruits, Flowers and Seeds of.   | 46                 |
|                                                            |          | West of England Agricultural Show.....     | 388                |
|                                                            |          | Wheat, Ergotized.....                      | 74                 |



|                                          | PAGE. |                                          | PAGE.    |
|------------------------------------------|-------|------------------------------------------|----------|
| Wheat Growing in 1766, An Experiment of, | 132   | " Windsor" Bull, Death of the.....       | 244      |
| Wheat Crop, The, and its Enemies,.....   | 385   | Wire-Worm, Destruction of the,.....      | 642, 707 |
| Wheat Insect, The new,.....              | 417   | Women, Agriculture and,.....             | 731      |
| Wheat, Winter, Cultivation of,.....      | 461   | Woods at the International Exhibition... | 549      |
| Wheat, Cultivating Mixed Varieties of... | 516   | Wool, Different kinds of.....            | 177      |
| Wheat, Cultivation of, in Canada.....    | 551   | Wool and its Prospects.....              | 514      |
| White-washing Shingles.....              | 541   |                                          |          |
| Wild Vine.....                           | 185   | Year 1861, Mean Temperature of the....   | 38       |
| Wild Flowers, Cultivation of,.....       | 406   | Yield of Grain in England.....           | 400      |
| Window Plants, Cultivation of,.....      | 529   | Yorkshire Agricultural Society.....      | 524      |







THE

# Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, JANUARY 1, 1861.

No. 1

## On Permanently Locating Agricultural Exhibitions.

Under the head of "the management of Agricultural Societies," the last number of our talented contemporary, *the Country Gentleman*, has some very useful and practical remarks that deserve the best attention of all who are interested in the prosperity of these institutions. It would appear that farmers the other side of the lines, as well as on this, do not take that deep interest in the business of agricultural societies which they ought, but complain at home that the management is inefficient, whereas if they had done their duty by attending the annual meetings and taking their proper share of the work and responsibility, the defects and shortcomings which they so loudly complain of might have been, in great measure, prevented.

It appears that the question of permanent location has for some time engaged the attention of the friends and directors of Agricultural Societies in several of the States of the American Union, but that no general or very decided conclusion has as yet been reached. The question is evidently a complex one, and requires to be viewed and discussed on both sides; and our cotemporary offers a number of useful and common-sense suggestions that must be acceptable to such as desire to form correct notions on the subject. We are decidedly of opinion that no rule can be arrived at in an extensive Province like Canada, or,

perhaps, in any one of the States, that will admit of general, or, at least, unmodified application, as so much must depend on location, and sectional views and feelings. The union of township and even county societies occasionally for exhibition purposes, as permitted by our statute, when mutually desired, would doubtless prove beneficial. To enlarge the sphere of combination rather than diminish it is, no doubt, the true policy to be pursued. The chief value of Township Societies is the collecting of the best articles furnished by the locality, and creating therein a feeling of emulation, *with reference to the County and Provincial Exhibitions*. Our theory in Canada is that township, county, and Provincial societies, form mutual links of one great chain of agricultural operations; and the success of each, as well as of the whole, materially depends upon the manner in which this spirit of mutual dependance is practically carried out. The good and efficient working of *the whole* is the great object to be sought. Our cotemporary asks,

*"Is there not some method by which the advantages of both the permanent and migratory systems can be combined, by a Society occupying a still wider field of labor?"*

"The Provincial Agricultural Society of Canada West appear to have successfully accomplished this. Kingston, Hamilton, Toronto and London, the four chief cities of the Province, having publicly appropriated or privately subscribed the amounts requisite for the purchase and laying out of grounds and the erection of substantial buildings, each en-

joys in turn the quadrennial visit of the Society. Its exhibitions do not become "an old story" in any one of them; nor are the grounds and buildings in disuse during the intervals between the Provincial Shows. On the contrary, the former are made to furnish a fine park for constant and general resort, and the main building is of such nature as to be of service for public gatherings of any extraordinary size, while the buildings and grounds are also occupied by the County Society for its usual autumn shows.

\* \* \* \* \*

"We have for many years been convinced—we were so, before the experiment had been thought of by our Canadian brethren—that we shall ultimately be led to the adoption of such a system. We have watched public opinion gradually coming around, unless we much mistake, to a similar position. At least the discussion of the subject can do no harm. If it is objected that these are not "the times" to secure contributions for such a purpose, we reply that *all the outlay need not be made at once*; only let the city which secures the holding of the next Fair, in the assurance that in three, four or five years, it will again be selected, expend what it does expend in a permanent way, and so as to unite the objects of its local Societies, Agricultural and Horticultural, if there are both, with those of the State Society—and we shall have a beginning, to which additions can be annually made, until by the time the turn of the same place next comes, all the demands of the Society and the public would probably be fully met.

"But if our Cities are to take up the question as one of exactions from some greedy corporation, we shall have no hope of early success. So have not done the Canadian towns just mentioned. With them it has been matter of public pride and generous rivalry, to outvie one another in the character of the accommodation furnished,—well knowing that the better the public are suited, the more largely they will be present on such occasions. And when four years shall have run their round, each city expects a golden verdict upon the efforts it has put forth. They have moreover had in view the healthful recreation constantly afforded to their own citizens by the possession of such grounds, the conveniences of the buildings for public uses, and their presence as ornaments and objects of attraction to the city. Whether they have thought once for the farmers and twice for themselves, or twice for the farmers and once for themselves, we do not know: but they have had wisdom and intelligence enough to discern that the interests of both City and County are common, and constantly blending, and that nothing can be done which promotes the prosperity and intelligence of the one, without reacting in a similar way for the benefit of the other."

So far as our *Provincial Exhibitions* are concerned, the providing of permanent accommodation in four or five principal cities, as has been already done, in which they are held *alternately*, public opinion is most decidedly in favor of the new system; the full benefit of which, particularly in a pecuniary point of view, has not yet been attained. The first outlay in the erection of permanent buildings is necessarily heavy, and more or less difficult to meet, but when the next time comes for holding the show in the same place, a comparatively small expense only has to be incurred, and the great convenience and economy of the system will be equally and fully understood.

### Dairy Management.

Last year, that is 1861, a Peebleshire dairymaid published a little valuable tract, founded on her own observation and experience, on the important question of Dairy Management. It is to some of the more prominent points contained in this pamphlet that we invite the reader's attention.

Mrs. Agnes Scott, of Winkston, for that is the writer's name and address, begins at the beginning, when she tells us, "experience soon taught me that most milk and butter were produced when the *feeding* was most carefully attended to. In order to ensure this I superintended this department myself." At six o'clock, her cows are rubbed and littered down, and 4 or 5 lbs of straw per cow was given to them carefully, *quite dry*; at 8 o'clock the cows are milked; at 10 o'clock, they are fed with turnips, (a barrowful, or about 80 or 90 lbs., between three cows); or, failing this, a quart of peas or bean meal, mixed with a pint of water; at 10 o'clock, in *fine weather*, they are let out for an hour or two to water and exercise themselves, and in their absence the byres are thoroughly cleansed and aired; in bad weather they are kept in, and then a handful of oatmeal in three pints of luke-warm water is given to each cow three times a day, and in the first three pints a handful of common salt is dissolved. When the cows return to the byre, each one has 4 or 5 lbs. of straw, and between 4 and 5 o'clock, the same amount of turnips as in the morning; about 8 o'clock, 4 or 5 lbs. of meadow hay are given, and, in addition,



each recently calved cow has half a pailful of boiled turnips, mixed with a quart of peas or bean-meal rather more than lukewarm.—For four or five days after calving, Mrs. Scott does not give raw turnips. She says, “It is a great mistake to keep fodder in quantities lying unused; rather let the appetite be tested, and by keeping it always sharp, not only will the meal be eaten up with relish, but a much more healthy state will be maintained. The time of feeding should be regulated according to the season; milking time should also be so fixed that it may be *regularly kept*, and kept so as to be suitable not only for the parties engaged in it, but so as not unduly to disturb either the rest or feeding of the cows.”

It is evident, then, that in Dairy practice, ceaseless attention is the great secret of success, and that there is something more in the business than can be learned from books. Dairy knowledge is generally traditional, and often hereditary. We never saw a slovenly dairymaid whose mother was noted for superior dairy management. Regular and discriminate feeding, warmth and perfect cleanliness, with proper ventilation, are the leading conditions of success; the neglect of any one of them will be sure to produce injury and loss. The proper management of milk in the dairy, and the conversion of it into cream, butter or cheese, are interesting and very delicate processes, equally demanding a system of order and perfect cleanliness, guided by experience and a discriminating judgment.

### Death of the Prince Consort.

It is our most painful duty to record the decease of a no less illustrious personage than the husband of our beloved Queen! This sad news has produced the intensest sorrow throughout the United Kingdom, and those British dependencies which it has already reached; and in a few weeks more the whole British Empire, on which it has been truly said that “the sun never sets,” will grieve as one family for the loss of so great and good a man. Her Majesty in bowing with trustful resignation to the Sovereign will of Heaven, under this most afflictive bereavement, will have the consolation of knowing that she has the deepest sympathies of her subjects, scattered over the greater portion of the earth.

As the late Prince Consort was as distinguished in the pursuits of agriculture as in those of science and art, and indeed in every thing which tends to refine and elevate the character of a people, we think that an agricultural journal, in perhaps, the most important agricultural colony under the crown of England, should not allow this solemn and mysterious dispensation of Divine Providence to pass, unnoticed; and we therefore cordially transfer to our pages the following article from the *Mark Lane Express*, of December 16th:—

“It was only at the General Meeting of the Royal Agricultural Society on Wednesday last, that the members came to hear of the illness which would prevent their august President from being amongst them. It is true that the indisposition of his Royal Highness had already been rumoured, and that he had not occupied his place at the Council Board of the week previous. But who could have ever foreshadowed the fatal result? And indeed the blow has fallen so suddenly, that it is difficult even now to thoroughly realize the calamity. Scarcely a month since it is when, in all the pride of health and mature manhood, in the full exercise of his high abilities and business habits, we had to congratulate the agricultural world on the active interest that the Consort of our Queen was showing in our cause. Under his gracious countenance, as with the many other Arts he had fostered, that of the husbandman promised still further to prosper, as certainly at no era in its history had the National Society given so much promise as when the Prince Consort took its fortunes into his keeping. And then, in a moment, our joy is turned into grief, and our holiday-week closes in mourning and lamentation.

This, however, is perhaps but the echo of a somewhat selfish feeling. For the loss of Prince Albert, as he was more familiarly called to the last, is a common loss to the country. It is not alone Agriculture that will look around aghast for a Patron, a Friend, and an Example. Refined in his tastes, exemplary in his domestic life, and with the highly cultivated manners of a gentleman and a scholar, the Prince proved himself in every way worthy to be the consort of so illustrious a Sovereign. And such, perhaps, will be his great praise; as, in fact, it could scarcely be greater. Debarred from any direct share in the actual business of the State, no man has ever lived a more blameless life as a husband, or maintained his high estate as the father of our future Kings with more dignity and respect. It would but ill become us here to intrude upon the sacred privacy of a bereaved family's sorrow, but we must repeat that it is a feeling which will be shared and sympathized with by the whole country.

In our own repeated visits to the Royal Farms,

in recording his success as an exhibitor, and in noticing the favourable auspices with which he commenced his year of office, we have from time to time testified to all the Prince Consort was doing for agriculture. His was not merely idle, passing patronage or casual aid, but it was rather a pursuit he delighted in, and one that he followed out with equal energy and advantage. The most practical man could not go that pleasant round from the Flemish Farm to the Norfolk, and so back again by the Home and the Dairy, without learning something wherever he went. The very last meeting which we believe the Prince ever presided over was that of the Agricultural Council in November; while the culminating point to such a career should have been but during the next few months.—Regarded either as one of the Arts generally, or more especially as a grand gathering of that Society he had consented to preside over, the Great Exhibition was undoubtedly growing from under the late lamented Prince's design and development. There is a settled gloom now cast over its prospects, from which it can never hope to recover, even if, under the circumstances, the project be proceeded with.—The bustle and crowd of a World's Fair will scarcely harmonize with the heavy heart of the August Lady, in all the fresh, bitter pang of her widowhood."

### The Agricultural Statute—Proposed Public Meeting.

The following circular has been addressed by the Secretary of the Board of Agriculture, to the County Agricultural Societies throughout the country, prior to their Annual General Meeting in third week of January :—

BOARD OF AGRICULTURE OF U.C.,

TORONTO, January 8, 1862.

SIR,—I beg to call your attention to the provisions of the Agricultural Statute, 20 Victoria, cap. 32, requiring each County Agricultural Society to hold its annual Meeting during the third week of January.

It is a part of the duty of each Society, at such Annual Meeting, under clause 11 of the Act, to nominate four persons as Members of the Board of Agriculture.

I beg to state, for the information of your Society, that the Board of Agriculture, as constituted last year, consists of the following gentlemen :—E. W. Thomson, Toronto; R. L. Denison, Toronto;

Hon. H. Ruttan, Cobourg; Asa A. Burnham, Cobourg; Hon. George Alexander, Woodstock; Hon. Adam Fergusson, Waterdown; Hon. David Christie, Brantford; and Wm. Ferguson, Kingston.

The four members who now retire are Messrs. Thomson, Denison, Ruttan, and Alexander; their retirement, however, does not render them ineligible for re-election.

The Statute requires each County Society to transmit, without delay, a certified list of the names and address of the persons nominated, to the *Secretary of the Bureau of Agriculture and Statistics, Quebec*.

I beg to remind you that a report of the last year's proceedings of each Society is required to be brought up and adopted at the Annual Meeting. It is desirable that these reports should be as full and complete as possible. The Act requires that they should contain a list of the members of the Society and the amount subscribed by each; a statement of the premiums awarded during the year, showing the amount, and for what and to whom awarded; such remarks and suggestions upon the Agriculture and Horticulture of the County, and Arts and Manufactures therein, as the Directors shall be enabled to offer; and a detailed statement of the receipts and disbursements of the Society during the year. The reports of the Township Societies are required to be transmitted to the County Societies in time for the Annual Meeting of the latter, and to be forwarded, along with the reports of the County Societies, to the Board of Agriculture, Toronto, on or before the 1st day of April. An abridgement of the Reports will appear in the Transactions at as early a day as possible.

I have to request that you will see that the reports of the Township Societies in your County, when they come into your hands, are complete in the several points mentioned, before forwarding them to this office, along with your own. I will also thank you to be particular to add to the report lists of all the officers elected for the present year, for both County and Township Societies, with the Post Office Address of each.

You will please observe that the names of members of the Board of Agriculture are to be forwarded to the Secretary of the Bureau of Agriculture, QUEBEC; and that the Annual Reports, &c., are to be trans-



mitted to the Board of Agriculture, Toronto.

I have to direct your attention to the following copy of a resolution adopted at the Annual Meeting of the Agricultural Association at London in September last:—

*“Resolved,—*That the Board of Agriculture are hereby requested to give notice to the several Electoral Division Agricultural Societies to send up each one delegate to attend a meeting to be held in Toronto the month preceding the meeting of the Legislature, for the purpose of agreeing upon and recommending such alterations as they may deem necessary in the Agricultural Statute, and that the Board of Arts and Manufactures, and delegates from the Horticultural Societies, be invited to attend; and in order more fully to carry out the spirit of this resolution, a synopsis of the Bill introduced at the last meeting of the Legislature be published, and a copy thereof sent to each County and Electoral Division Society, in order that the delegates may have a thorough knowledge of the subject under discussion, and that the travelling expenses (i. e. the fare for railway or other mode of conveyance, strictly,) of such delegates be paid out of the general funds of the Association, and that the President of the Board of Agriculture be authorized to name the day and place of meeting by circular.”

In accordance with the foregoing resolution I have to request that your Society will appoint one delegate to attend a meeting at the Board of Agriculture office, 188 King Street West, Toronto, at noon on Thursday, 30th January, inst., to take into consideration the above named matter.

The chief points in which the Agricultural Bill before Parliament last session differs from the Act at present in force, so far as relates to Agriculture, are the following:—

1st. A difference in the mode of electing the members of the Board of Agriculture.

Under the present Act each County Society annually votes for four persons as members of the Board, and the four persons who receive the highest number of votes from all the Societies in the Province, are thus elected for a term of two years; the number of elective members in the whole Board being eight, four of whom retire in rotation each year.

Under the Bill of last Session, Upper

and Lower Canada would each be divided into twelve agricultural districts; in each District each County and Township Agricultural Society would be entitled to vote for one person to represent the District at the Board of Agriculture, and the person who should get the majority of votes of all the Societies in a District would become the member of the Board of Agriculture for that District for two years. The number of elective members of the whole Board in each Section of the Province would be twelve, six of whom would retire annually in rotation.

2nd. The Agricultural Association as existing under the present Act would be entirely abolished under the bill of last session. There would be no delegates appointed by the Agricultural Societies to represent their views at the Annual Meeting of the Association, to elect officers, and vote for the next place of holding the Exhibition. There would in fact be no Annual Meeting, no Association, and consequently no members of the Association. The appointment of the time and place of holding the Exhibitions, and the management of all the business connected with them, would rest entirely with the Board of Agriculture, under its new organization, as above mentioned, and with the Local Committees which it might appoint.

3rd. The degree of connection which exists under the present Act between the Board of Agriculture, and the Board of Arts and Manufactures, in the business of the Annual Meeting of the Association, and in the general management of the Exhibition, would be abolished under the proposed Act. Each of the Boards would be empowered to hold Exhibitions, and it would be optional with them to hold them jointly or otherwise, as they might deem proper.

4th. The County Societies in Upper Canada heretofore entitled to receive a public grant amounting to \$1000; would under the proposed Act be entitled to receive a sum not exceeding eight hundred dollars.

5th. Under the proposed Act, of the amount granted for the encouragement of Agriculture, ten per cent in Upper Canada would be placed at the disposal and in the hands of the Board of Agriculture for the purpose indicated by law. It is not clear whether this ten per cent is to



be retained from the grants to the County Societies as heretofore, or whether it is to be received directly from Government, out of the amount of the Annual Grant for Agricultural purposes, prior to the apportionment of the grant to the Agricultural Societies.

There are some other minor changes in details, as to days of holding meetings, &c., which it is not important to mention at this time.

The delegate who may be appointed by your Society is requested to consider fully these proposed, alterations in order that he may be prepared to express his opinion upon their desirability or otherwise, or to propose others which he may think preferable, at the meeting here on the 30th inst.

I am, Sir,

Your most obedient servant,

HUGH C. THOMSON,

*Secretary.*

### Winter Management of Sheep.

[The following article is taken from that excellent monthly, the *American Stock Journal*, and will be found to contain many useful hints to all who keep sheep in these northern regions. While fully endorsing the writer's views of the necessity of affording sheep shelter during cold and stormy weather, we would caution the reader against confining them too closely. None of the domesticated animals, perhaps, suffer so much from a want of ventilation, and from close confinement, as sheep.]

1st. *Sheep should be sheltered.* That sheep require a good, clean, dry place, wherein they can be sheltered from storm, must be apparent to all who will reason a moment upon the subject. Storms, where the wool becomes saturated with water, not only impair their health, but wash out the natural yolk of the wool, necessary for its continued growth. All good wool raisers are agreed in this, and shelter and keep dry their sheep, especially in winter. The farmer will find himself abundantly rewarded by taking a little pains in this particular. And even if he has no sheds for his sheep to continually occupy in case of a storm, it is a good plan to turn the flock in upon the barn floor until the storm is over. It will richly repay him for his trouble.

In fact, I would rather my sheep should be shut up twenty-four hours, without food, than to be exposed to a long, cold storm.

By examining the fibres of wool upon the sheep's back, you will find them to be hollow, like the hair upon our heads. If these fibres are suffered to collapse by means of exposure to the snows and rains of winter, the growth of the wool is retarded, and it will take a long time, with the best care and treatment, for nature to re-open the fibres, and produce again that natural health and vigor.

Says a prominent wool-grower, "the advantages of housing sheep are manifold. 1st. A large per centage of deaths are avoided. 2nd. Much less food is consumed. 3rd. A much heavier and better fleece is obtained. 4th. The flock comes through the winter in a much finer condition. 5th. The lambs are more vigorous and likely to live. In short, reason, economy, and humanity, all conspire to teach the important lesson—*provide suitable stables for your sheep.* And he who can, and will not do it, ought himself to sleep barefooted and alone, on a couch of straw, with open windows, and under a leaky roof, where the winds go piping and careering through every crack of his cabin, for six months at least, until he shall have learned to sympathize with the dumb beasts God has committed to his care and keeping.

2nd. *Sheep should have water.* Many suppose that sheep can get along very well without water in winter, especially if they can get snow to eat. This is another very great mistake. Sheep do not drink large quantities at a time, but require it often; especially if they are not fed with roots. Just observe the operations of your sheep during the day, when fed with dry hay. They will run to the trough and take a few swallows of water, and then back to their hay, a number of times during twenty-four hours; and that too when the ground is covered with snow, showing that they prefer water to snow. Sheep undoubtedly will winter without water, but common sense teaches us that they cannot do as well without as with it, for the fluids of the system must be supplied to keep up a healthy organization. In Vermont, where water is plenty for all, and within the reach of all, that farmer who neglects this most important suggestion, should be considered a poor apology for a wool-grower, and should be compelled to go without himself a short season—sufficiently long to teach him that water is necessary for health and well-being.

3rd. *Sheep should be fed with roots.* That sheep require some kind of green or succulent food for winter use, I have demonstrated to my satisfaction. For a few years past I have fed potatoes and turnips to a portion of my sheep, and I know they have done much better than those which have been wintered without.

I raise some three hundred bushels of potatoes and one hundred of turnips, annually, which I cut up together, and mix in a little oat

meal or wheat shorts, and my sheep do remarkably well upon such feed. Especially is such food good for sheep about to have lambs, for it will make them have milk, should they lamb any time during the winter.

I think giving green feed to sheep in winter is generally overlooked by our farmers. European wool-growers consider this point of great importance. Morrell, in the *American Shepherd*, says, "The feeding of green food, such as potatoes, apples, hemlock or pine boughs, &c., is strangely disregarded by a large majority of American wool-growers. This is a prominent point of attraction of German management; indeed, it is thus in every section of the continent, where fine-wooled sheep are cultivated. The sheep, if placed in localities suitable to its general habits, at no period of the year is so perfectly healthy and thrifty as during the season of pasturage; and from this the inference should be deduced, that succulent food is the prominent inducing cause. Confinement to wholly dry food does not comport with that variety of condiment which has been urged so frequently, and consequently if a provision is not made of something else, it will be followed by disorganized action of the digestive functions, producing costiveness and constipation. The disease so frequent and fatal in American flocks, called the "stretches," results from costiveness; but this is scarcely known in England; which arises from the large variety of food the sheep are supplied with during the winter months. In addition to this, further proof may be found in the fact, that it is never known to attack the animal during the grass season. The writer speaks from personal observation, in stating that a supply of green food is indispensably necessary as a preventive of this disease.

In addition to green food operating thus, it has a tendency to increase the wool and yolk secretions, and thereby those valuable properties of wool, such as elasticity, softness and soundness, are increased and perfected; and withal, being conducive to health, the condition is improved, and consequently an augmented quantity of wool is a certain result.

These hints, though oft repeated, may have a tendency to do good if properly appreciated.

## Agricultural Intelligence.

### The Smithfield Fat Cattle Show.

This world renowned exhibition took place, as usual, during the second week in December, and for the last time at its old quarters in Baker street. A new Agricultural Hall is in the course of erection at Islington, a populous suburb of London, in which ample space will be found for the display of machinery, roots, seeds, &c., as well as enlarged quarters for increasing collections of fat stock. The show having so largely

increased of late years, particularly in the department of implements and machines,—a department not originally contemplated—that the premises in Baker street have been several times enlarged, still they are found altogether inadequate to present wants.

The following statement we have condensed from our excellent cotemporary, the *Mark Lane Express*, a paper that stands unrivalled for the copiousness and fidelity which characterizes its agricultural intelligence.

It appears that the society is in a very flourishing condition; and with more extensive accommodation, which it will have hereafter, a more prosperous future is anticipated. The prizes this year amounted to the sum of \$1,343 in money, and £160 in medals. For the future, the society is to receive £1000 a year from the Agricultural Hall Company for the privilege of holding its shows in that Company's new building, a picture quite novel in the management of agricultural exhibitions. The following table presents the number of animals of the different breeds for each year since 1854:

|                          | 1855 | 1856 | 1857 | 1858 | 1859 | 1860 | 1861 |
|--------------------------|------|------|------|------|------|------|------|
| Shorthorns . . . . .     | 40   | 42   | 43   | 4    | 47   | 36   | 50   |
| Devons . . . . .         | 17   | 21   | 32   | 28   | 37   | 33   | 33   |
| Herefords . . . . .      | 20   | 21   | 36   | 26   | 18   | 17   | 15   |
| Sussex . . . . .         | —    | —    | —    | —    | 15   | 15   | 15   |
| Scotch horned . . . . .  | —    | —    | —    | —    | 10   | 11   | 7    |
| Scotch polled . . . . .  | 16   | 13   | —    | —    | 13   | 5    | 7    |
| Welsh . . . . .          | —    | —    | —    | —    | 9    | 3    | 9    |
| Cross breeds . . . . .   | 7    | 12   | 64   | 35   | 17   | 19   | 8    |
| Norfolk . . . . .        | —    | —    | —    | —    | 4    | 4    | 4    |
| Longhorns . . . . .      | —    | —    | —    | —    | 4    | 3    | 4    |
| Irish . . . . .          | —    | —    | —    | —    | 1    | 1    | 1    |
| Extra Stock, &c. . . . . | 12   | 30   | —    | 40   | —    | 16   | 16   |
|                          | 112  | 139  | 176  | 171  | 175  | 163  | 169  |

It will at once be seen that the shorthorns are the only breed that have come up in greater number than was ever known before—making up nearly a third of the entire show. Devons, next in the list, stand at the old figure of last year, yet fewer than the year before that. Herefords have regularly and terribly decreased since 1857, and now are not one half as many as then. Sussex cattle are in equal force with the Herefords, neither more nor fewer for two years past. Scotch cattle are not so numerous as before. Welsh are a little stronger; but Cross-breeds amazingly reduced in number. Norfolks and Longhorns are but few, as usual. Irish put in but a solitary specimen, and extra stock animals maintain their common number of entries.

Of short horns it has been observed:

"We have often made complaints of the un-



finished condition of a considerable proportion of the steers and oxen of this breed: stalls have been taken up by too many plain animals—good butcher's beasts, but little more. Happily, there has been improvement in this respect; and good quality is now pretty well diffused among the numerous competitors for honors in the male shorthorn classes. Of course, we knew where to find the "Gold Medal" placard; for Baker street was not likely to turn out anything more wonderful than Mr. Taylor's Bingley Hall steer. Already has it been written of his touch not being quite so firm as one might desire, about his colour being a very light roan, and his tail being hardly set on square enough; but, in looking him over and over again, especially taking a front view of his magnificent chine, rib, and breast-end; of his broad, level back, without an inequality; of his handsome head, fine muzzle, and kind, docile eye—not forgetting his slender bone, that you may all but span below the knee—we can find very little to disagree with; and when we handle him, and look at him behind, we don't at all feel inclined to pick holes in his merit, or grudge him any bit of praise that he may win. Symmetry had never a fairer exponent than this. In depth of frame, too, he is uncommonly great; but in general grandeur and nobility of appearance, that air and expression marking some specimens of the breed, this steer does not, in our opinion, equal animals that have appeared for the Gold Medal. But let Bates blood have a share of the merit of this year's triumph."

The Devons in many instances combined splendid quality of meat with greater size than is commonly seen; and there were several useful animals of the Sussex breeds, originally derived from the Devon, but larger and coarser. Of Scotch cattle, there were some beautiful specimens, also of Welsh; but from Ireland only a single cow,—a genuine Kerry—wonderfully developed during her sojourn in England.

In SHEEP, three additional breeds have been introduced for the first time; the Romney Marsh (Kentish), Shropshire and the mountain. The Shropshires, which of late have been gaining reputation, were not so well represented as could be wished. Of the Kentish sheep it is remarked:

"The two pens of Romney Marsh wethers excited a good deal of interest, because they exhibited in the most impressive manner what could be effected by judicious selection. The flat-sided, narrow-chested, old breed, 32 months old, with loose flesh, barely covering a gaunt frame, gave an additional conspicuousness to Mr. Murton's short, square, stylish sheep, with deep expansive fore-quarters, and free curling fleece, there was just one year difference in age between them, Mr. Murton's having arrived at

greater weight of mutton in twenty months than Mr. Newport's in thirty-two. That improved breed is a hopeful sign. We hear that the French Government has become a customer to a considerable extent at Smeeth, having sent for several of Mr. Murton's rams to improve the breeds in the South of France. The clip is from 8 to 10lbs."

"The mountain sheep were quite the novelty of this part of the show. Every one made a point to look at the Exmoors, and the breeders of the Cheviots, have, we hope, learnt something to their advantage by their visit to Baker-street. They cannot avoid the conclusion that a cross with a breed which comes to a greater weight, both as respects wool and mutton, in a year less time than is usual with the Cheviots, is a matter that must be looked to. We shall be glad to hear of some transactions between Mr. Quartly, Mr. Tapp, and Mr. James Hole, and the breeders of the North; for surely such an opportunity should not be missed by men of enterprise. The tendency of the meeting of the Club to bring men together to increase the produce of the country could not be better illustrated than by the pens under revision. Not only may the breed of mountain sheep be improved, but the hill-side pastures will be increased in value. The Cheviots were not the only sheep to be benefited by the cross. The big black-faced mountain sheep from Aberdeen were by their side, older in years, and larger in frame; but still the contrast was in favour of the ripe little Exmoors, so impudent and amusing, sitting on their hind legs like little dogs. Epicures need not entertain any fear that they will lose the fine flavour of the mountain mutton; there will still be haunches of as undeniable quality as ever encountered the heat of fire or criticism, while the hill country shepherd may have a chance of quickening his returns, and mountain pasture will rise in value."

The long-wooled breeds appear to be increasing in reputation daily; they made a splendid show. Mr. Foljambe's pair of three 20 month's old wethers, commanded great admiration. In forequarter they were wonderfully developed, two girthing 5 feet 7 inches, and in style and look were all that could be desired and for quality their wool was as remarkable as the other points. The following remarks are suggestive:—

"The classes for cross breeds are always interesting, and should ever form an important point in fat stock shows, because of the disposition of such animals to feed quickly. This tendency was specially observable in the cattle classes of last year, and was notable, though not so much so, in the show just closed—the cross between the Shorthorn and Polled Angus, the Shorthorn and Aberdeen, and the Hereford and



Shorthorn. The cross breeds of sheep were more remarkable this year than they have ever been, and we have seldom seen so wonderful a display as that made by Mr. John Overman, in the two classes with wethers, that were the result of his favourite cross between the Leicester and Southdown. Mr. Hine, too, made a grand display, and followed Mr. Overman in both classes. In the Extra Stock, the Oxford Down wether, an original cross between the Hampshire Down ewe and Cotswold ram, but now considered, by virtue of age, an established breed, took the lead with a grand sheep exhibited by the executors of the late Samuel Treadwell. Looking at these Oxford Downs from a consumer's point of view, they certainly seemed to abound in more good flesh than their more favored rivals, the Leicesters and Sussex Down cross, which though wonderful for rump, back, and plate, struck us as having the fat too predominant, and too unevenly distributed through the body. Mr. Overman's are large sheep, with a great display of the Leicester; while the Oxfords, already mentioned, and Mr. Druce's, which took a third prize, showed dark faces and wool, a large square frame, and fine quality. We preferred their head to that of the Leicester Down cross, as evincing a more high-toned and vigorous constitution. Mr. Oakley's cross between the Hampshire and Gloucester resulted in a most useful class of sheep, the only defect of which was in the thigh. Mr. Hine's small and pretty cross between the Down and Leicester were remarkable for fine bone and reduced offal; while Lord Berners' Cotswold and Leicester cross showed special merit."

In Pigs the show was, as usual, extensive, comprising animals fattened to the highest degree of the various breeds now cultivated in England. The implement department embraced most kinds of agricultural mechanics in their present improved forms. Next year will afford in the new building ample space for progress in increase in every department of this important and well-known institution.

We clip the following extracts from addresses made by members of the club at the annual meeting and dinner, which will be both interesting and suggestive to many of our readers.

"Mr. Barford moved the following resolution: 'That in future any sheep that may be exhibited for any prize offered by the Club, shall not be in any way clipped or trimmed (except on the head and legs,) and any sheep so clipped or trimmed shall be disqualified.' He said he considered that the present practice was based on a bad principle, and that the exhibitors deceived themselves in resorting to the system of clipping. A few years ago the Prince Consort, during a visit to Birmingham, called attention to a principle which he justly said was forcing its way

into society, namely, the introduction of science in art as the conscious regulator of production. In all their operations, said his Royal Highness, whether agricultural or manufacturing, it was not they who operated, but the laws of Nature which they had put in operation. Now, the clipping of animals into form was a departure from a law of Nature. When he was elected a member of that Club three years ago, he felt that its object was to encourage the breeding of those animals which would pay best, and produce the most nutritious food for man. It might be right and proper that a few animals should be exhibited in that extraordinary way, in order to show what state they might be brought to; but after having paid much attention to the matter, he had arrived at the conclusion that animals used in a lean state would always produce better stock than they would when then they were in a fat condition. A few Exmoure sheep were exhibited in the yard that day. They were a new class in the show; but as regarded quality, he fancied that there was more nutritious matter in one pound of those animals than in the same quantity of any other description of animals in the show. His only motive in moving the resolution was that the matter should be put on a sound footing. He was of opinion that every man who had been in the habit of clipping would do better to study anatomy and the laws of Nature than the art of deceiving."

This motion was lost by a vast majority; Mr. Fisher Hobbs remarked, "that if there was any one point in the animal that ought to be in a perfect state of nature, it was the face and head. In the Royal Agricultural Society such restrictions as that now proposed were abolished twenty years ago."

Mr. Torr, a very extensive Lincolnshire grazier and farmer, in returning thanks for the judges, congratulated the members of the Club upon the successful show in Baker-street during the past week, the merits of which he and his colleagues had a better opportunity of testing than any other parties. Whilst not so good as former ones in some classes, upon the whole it was a successful show. He was bound to say; that the Devons deservedly kept their place, that the Herefords were hardly up to the mark, and that amongst the Shorthorns there were certain shortcomings. Indeed, he thought they were very much indebted to Mr. Taylor, the winner of the Gold Medal, for the best oxen in any of the classes, for saving their credit, as he might also say, on the present occasion; for they might depend upon it that if his ox had been taken out of the show, a large plum would have been abstracted from the pie. With regard to the heifer class of Shorthorns, he would take the liberty of advising his Shorthorn friends to use more exertion, or they stood a chance of losing the Gold Medal which they had so con-

stantly carried away of late years. He supposed however, the real fact to be that this description of stock had become valuable, and was making such fabulous prices as lean stock, that still less would be seen of them here in future. The cross-breeds in the show were the best he had ever seen, and the Scotch cattle were pre-eminently good. Another class in which he himself felt a little interest was the Leicesters; and he thought the Leicesters never cut a better figure, or the long-wools taken altogether. As to the Southdowns, continued Mr. Torr, why they have got so perfect that there is no use to talk about them; while the pigs are, as usual, wonderful! As a judge, he regretted to say that of late years the practice had grown up of judging animals too much by tape and two-foot rule. Now, for his part he could not see much value in applying any such test. A bullock or sheep was not like a brick or piece of iron, cast in a mould, so many inches long and so many inches wide and deep. There was intuition, an innate taste, in all judging—something in a man's brain who had been nurtured and brought up as it were with stock, a principle within him which, if it were right, would make him a good judge. That man would form his opinion from the character of the animal, and something else perhaps which he might be unable to describe in words; but as to these measurements and computations, he had lived long enough in the world to know that they were of very little worth. He had tried all sorts of measurements in his time, but he would rather take the result of his friend Mr. Giblett's glance than all the measurements in the world as to weight (cheers); and as to character, give him the man who had devoted himself to one particular breed; but do not choose him to be a judge of any other."

Mr. Brandreth Gibbs, the honorary Secretary, to whose long and indefatigable exertions the Club is greatly indebted, in returning thanks observed:—

"He need say but little with regard to the present state of the Club, after what had been said by those who preceded him; but when he told them that they had a balance of more than £3,000 in addition to £1,500 of invested surplus annual income, and £700 more to receive on the following day in Baker-street, and that there was only about £1,500 to be paid out of all this for prizes, they would perceive that the Club was financially in a most satisfactory condition (cheers). It is now twenty years since the Club met in a small livery-stable yard in Smithfield. With its progress since they were all familiar. There had been two great eras in its existence: the first was its formation; the second was its removal to Baker street. From the latter its prosperity might be said to have dated. Its increase had since been progressive, and from having only £300 for a very limited prize list, it was now enabled to offer the

large amount he had mentioned. Although they were going to a magnificent hall, he should often look back with feelings of great satisfaction to Baker-street. Baker-street and the Smithfield Club had in his mind long been associated together. During the eighteen years that he had been the honorary Secretary, it was there that he had worked, and he should often have most pleasing recollections of the past. As regarded the future, he could only say that he looked forward to a still more brilliant career for the Club, and that no exertions should be wanting on his part during the coming year (loud cheers) to render the first meeting worthy of the inaugural show of the Smithfield Club at the Agricultural Hall.

### The Royal Dublin Society,—Winter Show.

This important Society, which has been established, we believe, upwards of a century, held its Winter Show on the 18th and 19th of Dec. in the very extensive and convenient Hall, Kildare Street, and every portion was fully occupied by the different departments. The weather was most favorable, and the attendance of visitors very good. We abridge the following statement from our talented cotemporary *The Irish Farmer's Gazette*, a paper which, for the soundness of its practical views, must exercise a very beneficial influence both on the agriculturist and the agriculture of the lovely Emerald Isle.

It appears that the greatest portion of the now considerable income of this venerable society is devoted to arts and manufactures, and the *Gazette* loudly, and it would seem justly, complains of the comparatively little encouragement to agriculture, particularly at the Winter Shows, and the agricultural interest seems but feebly represented in the Board of management. This is an unfortunate mistake, as Ireland upon the whole is by far more decidedly agricultural than any other portion of the United Kingdom, and the resources of its soil, particularly for stock raising, are immense. Still the turn out of stock is said to have been astonishingly good on this occasion; and the report furnishes a number of animals both of pure and mixed blood that evinced excellent points, and would yield beef of the best quality. Sheep were well represented, particularly the long woolled, and Mr. Allan Pollock seems to have greatly distinguished himself in this department, as he did among cattle.

"Pigs are getting scarce in Ireland—a fact



which the *Times* considers one of the best evidences of our improved circumstances; and the fat pigs were not so numerous as they might have been. But there were some choice ones among them, particularly a very nice lot of thick, symmetrical, tempting little pictures of the small Yorkshire breed."

There were also some fine specimens of the great Yorkshire breed, as also Berkshire, Middlesex, &c. In Poultry the show was very good, particularly the Dorkings, Cochins, also Turkeys and Geese. "The Geese had immense birds to represent the class, among them a pair of *Canada Geese*, which were greatly admired, and no doubt, can be easily domesticated, and, as they weigh as much as twenty pounds, deserve attention."

In vegetables the show appears on the whole not very extraordinary. The soil and climate of Ireland, it is well known, are admirably adapted to the growth of root crops. The following extract contains some matter worthy of more attention on this side the Atlantic:—

"It is conceded that the prize mangels particularly were somewhat coarse, and some would have it that the prizes in roots should have been awarded to some specimens more cleanly grown; but the fault of coarseness was more or less apparent in all those exhibited, and it was calculated that if all had been trimmed so as to remove every portion over and above the solid roots, that the largest specimens would still carry the weight. However this may be, it would be a great improvement in the list of prizes for forthcoming shows that a prize would be given to the cleanest grown specimens, irrespective of, but up to or beyond a certain average weight. We must again in this general notice, refer to Lord Claremont's magnificent collection of farm produce, which amounted in the aggregate to several tons weight, and so numerous were the groups as to leave no doubt on the visitor's mind that the general crop could not be much behind the specimens exhibited, and it would be impossible for any single exhibitor in Great Britain or Ireland to exhibit such a collection, or that exhibited by J. J. Radcliffe, LL.D. Both Mr. Brady, Lord Claremont's steward, and Mr. Linahan, Mr. Radcliffe's steward, acknowledge that the superiority of their crops is owing chiefly to the after dressings of Phospho-Peruvian Guano they received. The following very concise and graphic description of Mr. Brady's mode of improving the land at Marino and cultivating the crops was appended to Lord Claremont's collection, which must be of considerable use and interest to some of our amateurs and less practised agriculturists:

"The original depth of *active or surface soil* of the land which produced the greater portion

of the items in this collection was scarcely seven inches; the subsoil a yellow clay, recumbent on a gravelly bottom. The annual produce of it in its reclaimed state, either in grass or in tillage, was scarcely worth £8 per Irish acre.

"It was thorough-drained at a cost of £4 10s. per acre, and subsoiled with the spade at £8 per acre.

"In subsoiling it, the *subsoil was not turned up*, and the *active soil all turned down*, but the subsoil was broken and loosened to the full depth of the pick and spade, and left lying on its own bed, and the active soil turned over it, *upside down*.

"The work commenced in December, and was finished by the beginning of February.

"In the last week of April the ground was thoroughly pulverized with Graham's deep grubber, and a portion of the broken subsoil well incorporated with surface soil. It was harrowed and rolled, and the mangel seed all sown by the 1st of May.

"The turnip ground was similarly treated, and the seed sown by the first week in June.

"The manure for the mangels was 35 tons of well-prepared compost and 4 cwt. of phospho-Peruvian guano per acre, and the produce not less than 90 tons per Irish acre.

"For the turnips, 30 tons of compost and 4 cwt. of phospho-Peruvian guano, and the produce 70 tons per acre.

"P. S. — Whoever doubts this statement, I shall be happy to meet him here. He can see the ground and the produce, and judge for himself.

"JAMES BRADY.

"Marino, 13th December, 1861."

The show of agricultural implements and machinery is described as of a superior character, deserving of the highest commendation and support. Many of the principal English makers were well represented, but, from some cause which does not appear, the Irish manufacturers, who now produce some first rate articles with all the appliances suggested by modern mechanical ingenuity, appear to have been but few. The report thus concludes:

"The whole central hall was crowded with the machines and implements exhibited. The frieze was exhibited on the galleries; but we have to remark that though our English friends have come forward as usual, and in great strength and power, at vast expense and loss of time—for which we hope they may be fully remunerated—we regret to find none of our Irish agricultural implement makers have done the show or the *Public* the honor of exhibiting their implements, with the single exception of Ritchie, of Ardee. Polished steel breasts or mould-boards for ploughs are now common in England; they

are much lighter than the cast iron ones, last longer, and are so perfect in form that they run through the land lightly, and with much less draught on the horses. We don't see why the Irish manufacturers should not adopt them; they are cheap, and every way superior to the common metal ones. Verily, the native manufacturers must look to their laurels; they have won them fairly in several well-contested fields, but that is no reason why the Irish farmer must still kill his horses in dragging through the soil a heavy implement, when modern art and science have supplied him with a better and as an enduring an article."

### Profits on a Poorhouse Farm in Ireland.

It would appear that in most parts of Ireland the harvest of 1861 was deficient both as regards quantity and quality, the growing season having been accompanied by incessant rains and a low temperature; conditions unfavorable to root crops, and oftentimes absolutely destructive to cereals. Hence we hear of a large portion of the potato crop being entirely destroyed by disease, hay spoiled, turf insufficiently dried for the purpose of fuel, and the ordinary produce of grain diminished, and its quality deteriorated. This gloomy future, there is ground for believing, has been somewhat overdrawn by certain individuals for party purposes, but it undoubtedly remains a fact that in this part of the United Kingdom, and also in Scotland, the unfavorable weather during the greater portion of last year, has been attended by very serious consequences to the farming interest.

Notwithstanding the husbandman must always continue in a great degree passive under whatever may, in the order of nature, be the character of the season, it is cheering to know that the tendency of our modern improvements is to provide him with a power, which, within limits not yet ascertained, enables him in some manner to modify the bad effects of unfavorable seasons. Thorough drainage and deep culture, for instance, will now often carry crops well through either a drought or an excess of moisture on soils where, before these ameliorating agents were introduced, they would have inevitably failed. Improved husbandry therefore gives us *improved*, if not equal crops, in bad seasons as well as in good. This great and encouraging truth we should study to keep constantly in mind, as the basis of every advancing

farmer's creed; and which is happily illustrated in the following statement of facts, which we take from the December number of the *Practical Farmer's Chronicle*. The writer in speaking of the good results produced by a suitable education in connection with improved cultivation, remarks:

"In proof of this, one example out of many others we could give, may suffice for the present. That we select is from the Poor-law Union of Enniscorthy, in the county of Wexford, and Province of Leinster. It is the only union in Ireland, to whose poorhouse is attached even the small quantity of land which the law allows. All, unfortunately, must now admit that the corn crops of this year are deficient in quantity in England, as well as on the continent; and under circumstances favorable, compared to Ireland, where the chief grain, and even some of the most important green crops, are all but a total failure; yet here, on this poorhouse farm, because of its superior management by the labor of paupers,—boys, the old at not over 14 years of age,—the culture of the grain crops, and some of the green crops, have produced the following results:—

| CR. |    |    | £                | s.  | d.    |
|-----|----|----|------------------|-----|-------|
| A.  | R. | P. |                  |     |       |
| 6   | 0  | 6  | Wheat .....      | 197 | 1 8   |
| 2   | 1  | 30 | Oats .....       | 49  | 9 2   |
| 3   | 2  | 10 | Mangel Wurzel .. | 89  | 0 7   |
| 1   | 2  | 19 | Cabbage .....    | 55  | 13 11 |
| 0   | 0  | 37 | Carrots .....    | 8   | 0 8   |
| 0   | 0  | 20 | Parsnips .....   | 4   | 6 8   |
| 0   | 1  | 0  | Onions .....     | 19  | 17 0  |
| 6   | 1  | 0  | Meadow .....     | 55  | 3 6   |

|    |   |   |      |    |   |
|----|---|---|------|----|---|
| 20 | 2 | 2 | £473 | 13 | 2 |
|----|---|---|------|----|---|

| DR.                                                                                                                       |  |  | £    | s. | d. |
|---------------------------------------------------------------------------------------------------------------------------|--|--|------|----|----|
| Rent .....                                                                                                                |  |  | 90   | 2  | 10 |
| Labor; wages of Ploughman ..                                                                                              |  |  | 20   | 16 | 0  |
| Taxes, purchase of implements, repairs of same, Machine for threshing corn, artificial manure and other incidentals ..... |  |  | 79   | 11 | 8  |
|                                                                                                                           |  |  | 190  | 10 | 8  |
| Balance to credit of Farm .....                                                                                           |  |  | 283  | 2  | 8  |
|                                                                                                                           |  |  | £473 | 2  | 8  |

Comment on the foregoing would now be needless beyond this; that in some wheat lands in Ireland, far superior to the Enniscorthy land, the value of the wheat crops did not amount to *one fourth* of the value as above; on better oat lands, the proportion is equally low; whilst the mangel wurzel and carrot crops in Ireland are all but a total failure. Even the Swedish turnip crops are exceedingly inferior, on very superior soils; whilst, on some of the best meadow



lands in Europe, the low, rich lands of the midland counties of Ireland, the hay crops have been rendered valueless, except for dung manure. But why these superior results obtained at this poorhouse farm? Because (1) the land is partially—yes, and *but partially*—drained to render it fit for being worked; (2) because it is worked as it ought to be, comparatively speaking; for though *practice* is brought well to bear on it, science has not yet done enough to advance the interests of the farm, or promote the education of the boys.”

The above facts clearly show something of what yet remains to be achieved for the agriculture of the Emerald Isle by the happy union of capital, science and improved practice. And when more of our Canadian forests shall have been brought under the subjection of our rude methods of tillage, who can calculate the millions which our soil will then be capable of supporting, by the use of those necessary means for effecting its full agricultural development?

### The Birmingham Cattle Show.

The eleventh Exhibition of this Society, embracing chiefly the midland counties of England, was held in the spacious Hall of the association on the 2nd 3rd, and 4th of December. Every year this Exhibition has been gaining ground, the total number of entries the first show being 901, while this year it reached the largest aggregate ever attained, 2055. The prize list now amounts to £1,300, not including the value of medals and a large number of special premiums. We take the following facts from the *Birmingham Daily Post*.

The Herefords, which are well known for their fattening propensities, appear to be falling off in numbers at this Exhibition. In 1859 they reached 32; in 1860 they fell to 25; and this year are only 21. They were, however, remarkably good in quality, flesh bearing points being strongly developed. The cows were excellent. His Royal Highness Prince Albert, was a large exhibitor in many sections, and usually more, or less successful with this breed, got only a “commendation” for his steers. Mr. Shirly of Bawcott, Salop, a most distinguished breeder, got the first prize of £10, the Society’s other prize of £20 for the best Hereford in the yard, and the Presidents £25 cup for the best ox or steer of any breed or age, fed and bred by the exhibitor. The Herefords carried away two out of the five grand premiums.

In Shorthorns the competition was much greater than on previous occasions; numbering only 29 in 1859–60, but reaching to 45 in 1861, and their general quality ranged extraordinary high. Earl Spencer was among the most successful, but Mr. G. Taylor of Bridlington, York-

shire, appearing for the first time in Bingly Hall arena, at once reached to its highest point of honor. He obtained the £10 prize of the class; the extra prize of £20, for the best Shorthorn Exhibited, and the Society’s Gold Medal for the best ox or steer in the yard. The class of cows is described as extraordinarily good. The Devons were few, but of high quality, the first prize for cows was taken by Prince Albert. There were only four entries in Longhorns. In all the crosses there was a strong infusion of short-horn blood, the examples of which presented striking points of excellence. Of the Scotch breeds there were only six specimens, the expense of transit so great a distance will likely keep this interesting class small. Mr. W. McCombie, of Tillyfour, Aberdeen, carried off the honors for both oxen and cows, firmly maintaining against all comers the position which he has for some time held of being the most successful breeder in this department. His prize Galloway cow was pronounced the gem of the collection. She obtained the £10 prize of her class, the Society’s Gold Medal for the best cow or heifer, and the Hotel and Inn-keepers’ twenty guineas cup for the best animal of any class in the yard. She measures 8 feet 8 inches round the girth, and her fulness and truth about the hind quarters are the points in which she is supposed to have vanquished Mr. Taylor’s short-horn steer in the contest for general superiority over the whole yard. The show contained several admirably fattened specimens, perfect beauties in fact,—of the Aberdeen and West Highland breeds.

The sheep mustered in larger numbers (68 Entries) than in former years and the competition was stronger, but the general excellence, perhaps, was scarcely equal to some previous occasions. Mr. Foljambe’s Leicesters were splendid specimens of fat sheep both in point of weight and symmetry; and the Duke of Richmond and Earl of Radnor showed some South-downs which commanded universal admiration. In the number of pigs the show was even less than last year, but what were brought forward were very superior animals both as regards breeding and fattening. His Royal Highness the Prince Consort was a very successful competitor in this department. The display of poultry was very extensive and superior; Mrs. Fergusson Blair, of Scotland, carried off numerous prizes in this department. Her silver gray and colored dorkings, white Cochin China, and B. amah Pootra, are said to have excelled anything ever seen on such occasions. This lady has written a very popular treatise on Poultry, which she treats both philosophically and practically in a most winning and useful manner. In point of numbers, and the proceeds of the gates, the show must be considered a distinguished success.

A new feature accidentally connected with this Exhibition deserves to be mentioned. Two years ago the Birmingham Cattle Show was chosen as affording the fittest opportunity for launching a new project, an Exhibition of *Dogs*.

Some 80 or 90 were entered for competition and a considerable interest was excited; while this year the entries exceeded 500, and the animals exhibited, while embracing the blood of the best kennels in the kingdom, also represented the almost endless varieties of those breeds not devoted to field sports at all. The handsome sum of £450 was given in prizes, besides a considerable amount of extras. A similar exhibition took place at Leeds during the show of the Royal Agricultural Society of England last July, and in London and other places, we believe, Dog Shows have been attended by a success and popularity hitherto unexpected.

### The Potato Disease.

An English writer comes to the following conclusions in regard to the potato disease. We publish them for the consideration of our readers.

1. The desirability of early planting in dry, clean, and well prepared ground.

2. The white potatoes are less liable to disease and are therefore to be preferred to the colored sorts.

3. That the soil in no case produces or influences the disease.

4. That the disease is of a fungoid character, infesting many varieties of plant, and increased in activity by atmospheric causes.

5. That all heterogeneous manures are injurious.

6. That lime and salt, mixed in the proportion of eight tons of lime with three cwt. of common salt is the best manure; and this is the proportion used to the acre.

7. That potatoes that ripen the earliest should be exclusively grown.

8. That, as soon as the disease appears, earthing up the stalks repeatedly with fine earth from the centre of the trench is the only effectual preventive to its ravages. To this operation the author attaches the greatest importance.

9. That when exhumed, sunlight appears to arrest the progress of the murrain, and prevents the further decomposition of the tuber.

### Hoeing Doubly Useful.

Hoeing between crops, in the garden or the field, when properly performed, accomplishes at the same time two of the most important operations in cultivation—namely, the destruction of weeds and the pulverization of the soil. The scratching and scraping with the Dutch and draw hoes, as is usually performed, no doubt cuts the young weeds to the surface, and in this way gets

rid of the annuals, but many biennials and most perennials, instead of being destroyed, are rather strengthened by the operation, while the pulverization of the soil is not effected beyond an inch in depth. If hoeings were commenced when weeds have only made their cotyledon leaves, say from half an inch to an inch in height, and were the Vernon or Spanish substituted for the Dutch and draw hoes, the weeds would not only be completely eradicated, but the soil would be loosened to the depth of six or seven inches. Another advantage the Vernon or Spanish hoes have over those in modern use is, that the operation may be performed between rows of root crops without injury to the tubers or bulbs, which often sustain great injury from being wounded by the others.—*Scottish Farmer*.

**HOME-MADE BONE MANURE.**—A. F. G. of West Gardiner, Me., writes to the American Agriculturist that he makes a good bone manure thus:—A kettle holding a barrel or more, which is kept for boiling roots for stock, is filled with bones, and caustic lye poured in to cover them. A gentle fire is built for two or three successive days, to barely warm the liquor through. In a week the bones become soft and fine. The mass obtained from one barrel of bones is then mixed well with about three loads of muck, the leached ashes from which the lye was obtained, being mixed with the heap. After lying awhile for the muck to partly decompose, the fertilizer is ready for use, and produces good effects.

### The late Lord Berwick's Sale of Herefords.

The great HEREFORD SALE at Cronkhill, as we learn from our English exchanges, resulted as follows:

|                                                   |           |
|---------------------------------------------------|-----------|
| First day, 104 head old and young, sold for . . . | £2959 17s |
| Second day, 42 heifers . . . . .                  | 1,018     |
| 34 bulls . . . . .                                | 1,353     |

Being an aggregate of 180 head, in round numbers, of about \$26,800, and an average of not quite \$150 per head all round—about \$135 per head for females, and about \$195 for males. The highest prices paid were 100 guineas for the bull "Retribution" and 70 guineas for the bull "Caning" both to go to Australia. Several head were purchased for Fred. W. Stone, Esq., of Canada West, who was the only purchaser whose name we find as coming from this side of the Atlantic; his purchases were Jenny, for 26gs.; Agatha 30gs.; Graceful, 23gs.; Wild rose and Sweetheart, heifers, at 40gs. each, and the bull Sailor at 20gs. Among other purchasers, were Col. Hood for the Windsor farms of Prince Albert, and many prominent land owners and occupants of the neighborhood. The prices are probably all that could have been hoped, on so



large a sale, while they are very possibly below the standard of value at which the late Lord Berwick would in many instances have rated the individual members of the herd.

The sale also included a flock of about 600 sheep, chiefly Shropshires—about one-half breeding ewes; “a lot of handsome white Berkshire pigs;” some dairy cows and heifers, and half-a-dozen Bretonne Cattle.

**RECENT ENGLISH RAM LETTINGS.**—The ram lettings in the eastern counties continue to show, as stated recently in the *Times*, a great development of enterprise on the part of sheep-breeders and the agricultural interest generally. At the letting of the Tethwell rams, for instance, the 117 offered made a total of £1200, being an average of £10 7s. each. The highest price for shearlings was £27, and the highest price for two shears and upwards was £55. At the annual Biscathorpe ram-letting, 120 fine animals were offered, and several of the shearlings were let at prices ranging from £20 to £30 each, one lot realizing £42, another £50, and a third £71. The two and three shears also went off well, three lots making upwards of £30 each, and another lot £52 10s. The shearlings averaged £15 13s. 4d., the two shears £14 1s. 10d., and the three shears £14 14s 7d each. The total sum realized for the 120 lots offered was £1786 10s., and the average was higher than at any previous letting at Biscathorpe, having been £14 17s. 9d., in 1861 £13 12s. 6d. in 1860, £14 14s. in 1859, and £11 9s. 4d. in 1858. Mr. William Torr, another well-known Lincolnshire breeder, has held his letting in the course of the last few days, and offered 40 shearlings, 24 two-shears, and 26 three-shears and upwards. For some reason best known to himself, Mr. Torr,—who is known throughout England as “Torr of Aylesbury”—did not conduct his letting publicly, but put his rams off by private contract. It was stated, however, that the average price obtained was satisfactory. Taking into consideration the increasing prices paid at these lettings, there seems little reason to doubt that the agricultural interest, notwithstanding the unfortunate harvest of last year, is still in a satisfactory and buoyant condition, and has abundant resources at command. The good prices obtained for meat and wool have caused additional attention to be devoted to the production, and hence the high prices willingly paid for first-class rams, from which sheep calculated to yield the utmost possible amount of mutton and the heaviest fleeces are likely to spring.—*The Field*.

### European Shepherds.

In Spain where the celebrated Merino flocks are bred, there are ten millions of sheep to be led, twice in the year to a great distance in search

of pasture, or a warmer climate. Forty or fifty thousand shepherds guide these sheep in their wanderings, and travel with them many miles.—Those shepherds have a very hard life; but they would not leave them, even if they could get better pay and less work elsewhere. As many as thirty thousand dogs accompany the flocks in their wanderings, and put up with hard fare like their masters. The Spanish shepherds live chiefly on bread seasoned with oil or grease; and though they sometimes procure mutton from their old and diseased sheep, it is not their favorite food. Their dress is a jacket and breeches of black sheep-skin, a red silken sash tied round the waist, long leather gaiters, a slouched hat, a staff with an iron point, and a *manta* or brown blanket slung over the left shoulder. When they have reached their journey's end, they build themselves rude huts, living generally in single life. Large flocks are managed by several shepherds, and that everything may be done with regularity, one of the most experienced is set over the rest. The times of their wanderings are in May and September, and the whole journey is that which has been taken for ages. The sheep know the way as well as their masters: and a free passage is granted to them through pastures, villages, etc., where the inhabitants are obliged to leave an opening for them, at least ninety paces wide. The shepherds on their part have to leave them as quickly as possible, that they may reach certain resting-places where they find an open space and good pasture.

In some parts of France the shepherds live a similar life. More than a hundred thousand sheep graze on the plains of Arles in winter; but as the spring approaches they show the greatest eagerness to set off towards the mountains bordering on Italy: and if not watched, they will escape and be lost. The shepherds set out in May for these mountains, driving their sheep in troops of from ten to forty thousand. To every thousand sheep three shepherds are allowed; each of which has his dog, and in the middle of the flock a troop of asses carrying baggage. A chief shepherd is chosen, by the general consent of his companions, to direct the march, to deal out the daily share of provisions, and to listen to the complaint of farmers, when damage is done upon the road. The shepherds' dogs are assisted in a remarkable way in keeping these large flocks in order. The goats are especially trained for the purpose, and have bells around their necks. They are kept in perfect discipline by the shepherds, and show great intelligence in the performance of their task. They halt or proceed at the word of command, and at the close of each day's march, they come to the centre of the flock, and wait there until the morning, when, having received their proper orders, they return to their station at the head of the flock with the greatest regularity. (On coming to a stream, they halt until the word of command is given, when they plunge into the water, and are followed by the rest of the flock.

When the flock reaches the mountains, each shepherd has his proper boundary marked out, and the proprietors of the land are paid about twenty pence per sheep for their feed during the Summer. The shepherds sleep with their flocks in the open air, and live almost entirely on bread and goats' milk.

In the south-west of France, on those wild plains called *Les Landes*, the shepherds lead a very singular life. The country consists of large tracts of deep sand, or of marshy ground, with scanty herbage and prickly shrubs. That they may cross these sands without difficulty, the shepherds fasten stilts, or wooden poles five feet long, to their legs, putting them on and off as regularly as any part of their dress. When their flocks are grazing, they do not take off these stilts, but remain elevated upon them that they may the better watch their sheep. The top of the long staff which they use in walking is made broad and round, so that they can sit upon it. Thus seated they knit stockings all day, and, clad in her rough sheep-skin coats and caps, they have a most singular appearance, looking like so many little watch-towers scattered over the country. The rate at which they can travel on these tall stilts is sad to be equal to that of a trotting-horse.

Some of the sheep-owners in Australia possess fifteen or twenty thousand sheep, and these are led out to graze before sunrise, and folded or brought back to the sheep-yard at night. The wild dogs of that country are great enemies to the sheep, and will sometimes fall upon them in the open day. The shepherd is, therefore, always on the watch; and in setting up his fold, he uses hurdles made of slender rods of iron or oak seven feet long, and so close together that the lambs cannot escape, nor dogs enter. By the side of this fold he places a moveable, weather-tight hut, in which with his dogs he passes the night, keeping a fire burning near the hut to scare away the wild dogs. He has also to watch against a more crafty foe in the escaped convict, whose retreat into the interior of the country is said to be usually well stored with mutton stolen from the different folds.

## Horticultural.

### On the obtaining of a New and Superior Parsnip from the Wild Species.

As the origin of some of our common cultivated plants has been considered by some to be a matter of extreme mystery,—a few (a very few) among botanists, holding the notion that such really have descended to us from the Garden of Eden,—we shall here give an account of some successful experiments in the ennobling of the wild parsnip, in order, if possible, to point out the principles connected with the development of these useful roots.

Professor Buckman, of the Royal Agricultural College, Princeton, in the autumn of 1847, gathered some seeds of the *Pastinaca Sativa*, (the wild parsnip) which was sown in the following spring. On coming up, the plants were *thinned*, and when sufficiently advanced it was found that most of the plants had the hairy, dark coloured leaves, with narrow segments, of the ordinary wild plants. Amongst these, however, were a few plants with the leaflets larger, a brighter colour, and smooth, like those of the cultivated examples. These latter, then, were left for the crop; and in the autumn of the same year the roots were taken up, and the best of them *stod in sand*, to be transplanted for the growth of seed.

Many of the second generation from the wild stock showed, on coming to maturity, more or less of improvement, on the small, wiry root of the wild species. Some of them had a generally clear, well-shaped outline, with a few lateral roots, whilst the foliage had assumed the form and colour of the garden parsnip. The objectionable lateral roots were in reality examples of finger and toe, which in a cultivated parsnip is sure to be derived from a degenerate stock; but, just as in the crop parsnip, this tendency may be considered as the sign of degeneracy, so in the present case it was viewed as an evidence of advance to a better form from the *wild state*. The selection of the best of these for seed, and again selecting in like manner from the produce, in ten years resulted in the production of a new variety of parsnips, possessing the following advantages:

1. A more perfect outline, as being free from finger and toe.
2. A better flavour than the ordinary parsnip.
3. As being of a newer sort, and as yet not degenerated in constitution from repeated cultivation in the same soil, it may be expected to be freer from tendencies to malformation or disease.

Professor Buckman found that this parsnip in form was all that could be desired, its root remarkably clear and straight, free from lateral branchlets, and its flavour such as to render it the best of all cultivated varieties. He gave it the name of the "*Student*;" and finding it impossible to continue growing it in the same soil without degeneracy, he assigned the seed to the well-known nurserymer, Messrs. Suttor, of Reading, who have grown it with great care, and the following is their report of their crop of 1861:

"We are happy to tell you that, in lifting some of each of the varieties of parsnips in our trial ground, your "*Student*" was decidedly the best shape, varying in length, but always clean and straight."

Such testimony then is good evidence of the value of this new form of parsnip, whilst the case, as we have detailed it, cannot fail to be interesting to those who would study the origin of our esculent vegetables. If the points before mentioned, gathering seed and sowing it in pre-



pared soil, selecting and preserving roots for the next generation, and so on, be attended to, most plants will get a new nature therefrom, and such experiments will soon show us that plants as esculents are the result of such cultivative processes; and when these are not attended to, they either die out altogether, or revert to their original wild condition. We learn that the seed of the Student Parsnip is now in the English market; and the large and beautifully executed wood engravings of the progress of this new variety from the wild state to its perfected form, in the last number of the *Practical Farmer's Chronicle*, both illustrate and verify the preceding remarks.

### Pomological Gossip.

**NEW SEEDLING PEAR.**—We have been presented by Mr. J. R. Richardson, of Dorchester, with specimens of a seedling pear produced by him. In nearly all outward appearances it is a near approach to the Bartlett, being quite as large. But in quality it far surpasses it, being at the same time a month later, a season when we need more large showy pears. When well known it will take its place among our very finest pears.

**CHASSELAS VIBERT GRAPE.**—Mr. Rivers speaks highly of this grape. It obtained the 1st prize at the Crystal Palace show, May 18th, last. The judges did recognize its proper name, but awarded the prize to it as a sweet-water grape. Its berries are very large, and of a pale amber color; flavor excellent. This variety of the sweetwater grape was raised by the late M. Vibert, of Angers, some ten or more years since, and no new variety of this class is of greater excellence. Its foliage is deeply incised, very hairy on its under surface, and thick and substantial, so as to be very striking. Chasselas Duhamal is its twin brother, and was raised from the same batch of seeds. It differs but little from the Chasselas Vibert and is equally good.

**KEENS' SEEDLING STRAWBERRY.**—In our late article on strawberries, we stated that this variety was still one of the most popular sorts in England. In this we are corroborated by an English writer, who, in speaking of the principal varieties of strawberries, says: "Take Keens' Seedling for all points, it will be a long time before it is superseded by any kind at present before the English public. I have had enormous crops of these, and the flavor, though not A 1, is not surpassed by many kinds." He also remarks that he knows "it is the opinion of a good practical man, that, for forcing, no strawberries are equal to Keen's Seedling, Oscar, and Sir Harry, the first being the best."

**BRITISH QUEEN PEAR.**—This is the name given to a new seedling pear, raised by Mr. Ingram, of the Royal Gardens, Frogmore. It is supposed to have been obtained from the

Marie Louise. Specimens of the fruit were exhibited before the Royal Horticultural Society, October 8, and were awarded a first-class certificate. The fruit was above the middle size, pear-shaped, of a warm red color next the sun, and possessing a sweet juicy flesh. When better known it is said it cannot fail to be a favorite.

**VESSIER'S PEACH.**—A new French variety, fruited by Mr. Rivers in the orchard house. The specimens, from pot culture, measured  $10\frac{3}{4}$  inches in circumference, and were rich and melting beyond any late peach he had ever tasted.

**EARLY VICTORIA PEACH.**—This is the same variety that was recently noticed in our pages as River's Earliest. Mr. Rivers recently exhibited the fruit before the Royal Horticultural Society, with the request that it should be called Early Victoria, which name was adopted. Mr. Rivers' account of it is as follows:—I send you four fruits of a seedling peach which I have this moment gathered from the parent tree, raised from a stone of the early York in 1854. It has hitherto proved the earliest of all, except the Red Nutmeg, which it usually succeeds. This season it commenced to ripen on the 5th September, or a week earlier than its parent, the Early York, and this has for four years, (namely, from 1858, when it first gave fruit, to the present time,) been its tendency, with the exception of 1858, when in common with very young seedling peach trees (as I find from experience) it ripened its fruit very early, and quite ten days before its parent. It has large flowers, serrated leaves, and a habit robust and vigorous in the extreme; being, with the Early York, the only sort that was not killed last winter in the open quarter where the frost was most severe (from 4 deg. to 6 deg. below zero.) If thought worthy of a name, I propose the Early Victoria. The fruit is about medium size, pale yellow on the shaded side, and dark dull maroon on the side next the sun. The flavor was most delicious, and the fruit was highly approved by the committee as a variety for orchard house cultivation, but they suspended judgment on it as an out door variety, until it had been grown against a wall in the open air. It was superior to the Early York or Early Ann, which accompanied it.—[*Magazine of Horticulture*.]

### Raising Figs at the North.

A correspondent of the *Horticulturist*, writing from New Jersey, says:

How few there are in this latitude who have ever eaten figs, ripe and fresh from the tree! Or if, perchance, they have tasted a single specimen raised by dint of great care in a pot or tub, can scarcely credit the fact that figs may be grown, even in this northern latitude, not as

exotics under glass, but as an out-door fruit; and gathered, not as single specimens, but in generous abundance and luscious sweetness.—Yet the fact is nevertheless so, and, under favourable circumstances, two crops may be realized in a single season.

The flavour of this fruit is not generally esteemed by those to whom it is a new sensation. The taste must be cultivated, and then it becomes as fascinating as the tomato or olive.

As to the culture of the fig, there is nothing difficult. The chief requisite is to protect the tree against the severity of winter; and this is done in precisely the same manner as the tender varieties of the raspberry, viz: by covering with earth. We have seen a protection of straw resorted to, but have never known it successful in this latitude. The best method of protection is to dig about the tree in the fall, deferring the act as long as the ground remains unfrozen, and then undermining and throwing the tree, so that all the branches and canes lie upon the ground; and then to shovel upon them soil enough to thoroughly bury them beyond the reach of the frost, taking care to so leave the ground that all excess of water will readily drain off.

There is a decided advantage achieved in this process in the way of root pruning, which prevents the plant developing too much into a tree shape, and thereby rendering it, as years increase, more difficult of being protected. The uncovering should be delayed as long in the spring as possible—at any rate until the long cold storms of early May are passed, say until about the 12th of May. Then, if nothing untoward happens, you may look for a summer and autumn crop.

### Trees for Winter.

No class of plants are more useful and none made worse use of than evergreens. For shelter there is nothing like the Norway Spruce, yet we see many gardens and houses exposed to the northern blasts without an evergreen or tree or shrub to break the force of the fierce winter winds. Other gardens are nearly filled with evergreens, and this gives them a dark and gloomy appearance. For a screen, of course, the trees must be planted close in rows, but on the lawn, for beauty, here and there a fine specimen intermixed with other trees is all that is required. Trees with bright berries, like the Mountain Ash and Euonymus are very desirable, and give to the winter garden a bright and lively look. A correspondent thinks that evergreens, and especially evergreen shrubs, are neglected in this country, and writes us to urge our readers to give more attention to this beautiful class. It is true that there is no country where the evergreens are more needed than our own. Without them, how cheerless and desolate our gardens appear full five months of the year. Our attempts to introduce new evergreens, however, have not always been crowned with success, as

many things of which we had strong hopes have proved too tender for our severe climate. Then our most beautiful native evergreen shrubs, such as the Holly, the Rhododendron, and the Kalmia, are difficult to remove, and do not thrive well with common treatment and in an ordinary soil. They are not generally propagated or planted, and deserve far more attention from both nurserymen and amateurs than they have received. We have, however, many beautiful evergreen trees, that will grow as easily as a Poplar, and are hardy enough for any climate between this and the Polar Sea.—*Rural New Yorker*.

TAKING UP FRUIT TREES.—As a rule, all nursery stock should be taken up with a fork in preference to the spade; in fact we would do all we could to banish the spade from this branch of the nursery business altogether, had we the power; but at any rate, where the preservation of every root is indispensable to success, as is the case with our present subject (fruit trees), nothing but the steel fork should be employed in lifting the trees. When out of the ground, if they have far to travel, wrap the roots in some damp material, or puddle them, to prevent them becoming dry before they are replanted.—*The Florist and Fruitist*.

### Concord vs. Delaware Grapes.

It has been the source of the highest gratification to hear in every quarter the praise of the Concord grape. While at one time, few would allow it any merit, now none would risk their pomological knowledge to deny its excellence. It has indeed proved more than we claimed for it,—the universal grape for the million. It would be idle to attempt to claim for it—which was never done—a superiority in flavour to the Delaware or Diana; but as the Bartlett pear is the pear, while the Belle Lucrative is scarcely recognized, so the Concord, at present is the grape: just as long as the Black Hamburgh will be preferred to the Sweetwater, the Concord will be preferred to the Delaware.

The past year has ripened the Concord in the highest perfection. Its real excellence just begins to be appreciated. The vines have acquired age, their rampant growth has been checked, and now their fruit-bearing qualities appear. It has improved under the same circumstances that have improved others it is so much in its favour. Its hardiness saved it from destruction last winter, when the Diana and Isabella were killed to the ground; its freedom from mildew is one of its great merits, and the certainty of a crop in all seasons must place this first among our hardy grapes.

The Delaware, after fighting its way for nearly ten years, is gaining in the estimation of cultivators. Delicious as the fruit is admitted to be, and hardy as the vines are, the berries lack size



and appearance. It is a little too small, while its colour does not make that show that the dark grapes do, with their rich bloom. The vines, too, want vigour and robustness. Young vines do not take hold of the ground readily; the foliage mildews slightly, and the tender wood does not cover the trellis quick enough. But to make up for these defects, it is hardy, productive, bears young, and is as early as the Concord. In its culture it needs generous treatment, a good soil, and plenty of manure. This season it has been unusually fine.—*Hovey's Magazine*.

## The Dairy.

### Kindness to Milk Cows.

Attention, dairymen! Read! reflect! and practice! We find the following in *Wilkes' Spirit of the Times*.

One of the greatest errors in overcoming cows that are unquiet while being milked, is to whip, beat, kick, and bawl at them. This is generally done, and the cow becomes afraid and instead of becoming better grows worse. Milk cows cannot be whipped or terrified into standing quietly, gently, and patiently during milking. They dislike to be milked, for they know that loud words and hard blows always attend the operation. They dread to see the milker as the little urchin dreads to see the birchen rod in the hand of an angry pedagogue when he expects to have it applied to his back. A cow, kindly and properly treated, is pleased to see the milker, gladly awaits his or her approach, and submits with pleasure to the operation of being milked. Every one having experience with cows knows this to be true.

But the cow is opposed to a change of milkers; she soon becomes attached to one person who performs the operation, and does not willingly and freely give down her milk to another person; therefore, have one milker to certain cows, and bear in mind, if you change milkers, it is at the expense of a loss of milk and of injury to the cow. All animals appreciate kind treatment and resent abuse. See that those who milk them can control themselves, govern their passions, speak low and kindly under almost any provocation, and soon the cows will learn that they are not going to be abused, and will submit to the operation. Milking should be performed at regular hours, not varying fifteen minutes one day from the other. No talking or laughing should be permitted."

### Health of Cows.

Good health in domestic animals is always a matter of primary importance. As bad health in parents transmits a tendency to disease in the offspring, it is important that every kind of animal we desire to continue on our farms should be kept vigorous and healthy.

As domestic animals are a source of human food, it is a matter of great importance to preserve them in a healthy condition. Diseased meat carries its qualities into the stomach of the consumers. It is a serious objection which vegetarians urge against the use of animal food, that the bad treatment they receive renders them unhealthy.

As an unhealthy animal cannot consume food to as good advantage as a well one, it is again economical to avoid disease.

Each of these circumstances is sufficient reason for guarding with scrupulous care the health of the animals we feed: but when we derive milk from animals, it is doubly important that they be kept free from every objectionable taint. A sickly cow not only yields a diminished profit, but she yields sickly milk, and sickly in a higher degree than her flesh.

If a cow eats anything that has a strong or disagreeable odor it appears in her milk.

If she eats anything medical, it comes out in her milk.

If she is feverish, her milk shows it.

If she has sores about her, pus may be found in her milk.

If she is fed upon decayed or diseased food, her milk, since it has been derived from her food, will be imperfect. It is as impossible to make good milk from bad food, as to make a good building from rotten timber.

If there is anything wrong about her it will appear in her milk, as that is an effective source of casting filth from her organism.—*Hallowell Gazette*.

### Poor Milkers Dry-Up Cows.

The great importance of having cows properly milked is very forcibly illustrated by the facts stated in the following article, copied from the *Boston Cultivator*:

When I first commenced farming, I milked all my cows with my own hands; and the result was that no one in the town could boast of having made more butter, according to the number of cows than me. I well remember of having a very noble cow for milk, which would fill a twelve quart pail twice a day; and that a friend while visiting us was anxious to milk her. As I was well aware of the bad results of permitting a poor milker to milk cows that are accustomed to be milked by one faithful, regular hand, I *unwillingly consented* that he might milk her. The result was that he obtained about one-quarter less milk, than she was accustomed to give; and although I tried faithfully to draw more milk after he had finished milking, my efforts were in vain; and it was several days before I could obtain from her the amount which she had been accustomed to give.

My manner of milking was to milk as fast as possible, until a cow was milked entirely clean. I was obliged at one time, to stop milking for

only a few minutes, and I found that the cow had drawn up her milk, and I could not get it that evening.

His manner of milking was very slow and easy; and after having been milking her as long as I was accustomed to be in milking her, she withheld the remainder, and nothing that I have ever heard of, could induce her to let it down again. This taught me the importance of employing one steady regular hand at milking.

In the seasons of 1858 and 1859, my wife complained very much, when I did not superintend the milking, that we did not get near as much milk as when I was there to attend to it. Of course I could not be always there, at milking times. Then the milking would devolve on a young man in my employ who *could* milk as well and as quickly as myself, when he had a mind to do it. But as he had inherited almost every characteristic of the human race, but the faculty of *pleasing*, or of trying to please, or of making himself agreeable, even in the society of cows, when I was not there, for the slightest offence he would fall out with the cows, and beat them, and have them all in commotion. Then of course, they would not give down their milk; for a cow has complete control of it, and she will not give it to a being that she hates. All that could be said to him about being gentle with them, and milking fast while he did milk, and keeping his finger nails cut short, &c., had no more good influences than this communication will have on hundreds of other boys in their boyhood, who think that they will make cows and everything else obey their commands.

In the spring of 1859, my wife insisted that I should do the milking. I attended to it as long as was expedient, and then told this young man that he must attend to the milking, and try to do it right and to have no difficulty with the cows. Well, in less than two days, my wife said, "What is the matter with the cows, that we get only about half as much milk as usual?"

The truth on the subject is, cows know much more than some persons think they do; and they will not love a milker who has nothing lovely about him, and who will not treat them kindly; and they will give him as little of their milk as possible.

S. E. Todd.

## The Poultry Yard.

### Fattening Turkeys.

A writer in the *Germanstown Telegraph* furnishes that journal with the following statement:—Much has been published of late in our agricultural journals in relation to the alimentary properties of charcoal. It has been repeatedly asserted that domestic fowls may be fattened on it without any other food, and this, too, in a shorter time than on most nutritive grains. I made an experiment, and

must say that the result surprised me, as I had always been rather skeptical. Four turkeys were confined in a pen, and fed on meal, boiled potatoes and oats. Four others of the same broods were also at the same time confined in another pen, and fed daily upon the same articles, but with one pint of finely pulverised charcoal mixed with their meal and potatoes. They also had a plentiful supply of broken charcoal in their pen. The eight were killed on the same day, when there was a difference of one and a half pounds each in favor of the fowls which had been supplied with the charcoal, they being much the fattest, and the meat greatly superior in point of tenderness and flavor.

### Cramming Poultry.

The unnatural practice of fattening poultry by cramming is very common in France, and is described as follows: The fowls are closely confined in dark pens, where they cannot move, and get but little air. Aided by the light of a lamp, the poultryman takes three fowls at once, ties them altogether by the feet, and resting them on his knees, forces paste pellets down their throats every twenty-four hours. The finer specimens of poulardes [hens] attain a weight of upwards of 8 lbs., the cocks, 13 lbs.; and these weights are sometimes exceeded. Another mode of artificial feeding termed *entonnage*, is by causing the fowls to swallow, by means of a funnel inserted into the mouth, farinaceous substances in a liquid state. In some instances "vermineries" are established in France for the purpose of breeding maggots from putrid flesh to feed poultry on. It might not be wise for epicures to inquire too particularly into the origin of some of their favorite viands.

### Impaction of the Crop in Fowls.

Our domestic fowls are very liable to an enormous distension of the crop by food which, in the absence of secretion, and from the quantity accumulated, becomes hard and incapable of being moved from the distended cavity. The fowl lingers on without appetite, and manifesting great dulness, torpor, and progressive emaciation. Death soon puts an end to the case, and then alone, in the majority of instances, the enormous crop indicates the nature of the fatal malady.

*Treatment*—In mild cases, this consists in pouring tepid water in the gullet, and manipulating the crop so as to soften its contents and press them back through the mouth or onwards into the stomach. In severe cases, no hesitation should be experienced in making a bold incision, evacuating the crop, and



drawing the lips of the wound together by silver wire suture. The fowl must then be fed for a few days on materials which do not lodge in the crop, in order to be prepared for the action of the gizzard, and well broken down meat with sloppy bread and milk, are the best forms of food for it.—*Prof. Gumgee.*

## The Apiary.

### Wintering Bees.

In countries where bees are prevented by the cold of winter from flying out at least for two months, it is best to transfer them to a particular standing-place. In making this change the fly-holes must be stopped, but they must be opened again after the bees are put up in their winter quarters. This removal not only saves food and affords protection from the cold, but the risk of the bees being ruined and the hives stolen is thus also avoided; as in winter they are prevented by torpidity from defending themselves, entire bee-stands might in this season be destroyed. It is hardly possible to provide bee-houses sufficiently with locks; at all events, it is expensive. In transferring the bees to their winter quarters, the following rules should be observed:—

1. The transfer should not take place until the frost has set in.

2. The winter quarters should be absolutely dark, else the bees will fly from their hive without being able to find their way back.

3. A dry cellar should be chosen, or rooms with covered windows, which allow neither the warmth of a stove, nor evaporation from a stable nor from cattle.

The hives may also be placed in barns among hay or straw. If warm weather sets in after their transfer, the holes of the cellar, &c., may be opened during the following night for the purpose of cooling the stand, for it is always better to keep their standing place a few degrees below than above the freezing point; but no particular ventilation is required. There are many villages in Germany having a common subterranean place into which hives are transferred, watching them and looking after them from time to time. In such cases the fly-holes must be made more narrow, so as to protect the bees from mice. To bury them in the earth, as above described, without admitting air, forms likewise good winter quarters as the bees require still less food. [Wm. Buckisch, Patent-Office Report for 1860.]

PLANTING WHOLE POTATOES.—A correspondent of the *Mark Lane Express* says he did not see a field of defectile potatoes in Germany last season, and attributes it to the practice of planting small potatoes whole.

## Miscellaneous.

### Habits of Beavers.

The habits and habitations of beavers furnish many interesting lessons for study to the woodmen and hunters, whether scientific naturalists or not. In our boyhood the principal sources of information respecting them were the old dams and traces of dams that were found on every little brook where we fished or hunted cowslips for greens. These beaver dams consisted of ridges of earth from four to five feet above the common level of the "beaver meadow" flat, running each way from the brook to rising land. We would find great numbers of these dams when it would be hard to understand how they could ever make ponds of sufficient depth for the beavers' use. But the brooks in the primeval forest, before the incursions of civilization, afforded more water than in modern times, and in many instances the marshy pools which the beavers' habits require, by natural process have grown up and filled up to solid land. As in the older part of the country no new works were found, it was generally understood that the beavers left and moved off whenever civilized settlements grew up near them, and we have been surprised to find in this region the evidence of so many working beavers. On the different tributaries of the St. John river, running out of this State, there are some hundreds of them caught every year, and they do not seem to diminish. Hunting parties, whether of white men or Indians, consisting usually of two or three men, get from ten to twenty beavers in a winter's hunt. Lumbering operations have a tendency to drive them to the small brooks and head sources of the rivers, when found on "driving streams" their dams have been torn away; but they do not seem particularly shy of men or settlements unless their dams or houses are destroyed. Four or five years ago, it is said, a company of them built dams and houses in the town of Ashland, only two miles from the village, or corner, as it is called, and staid two years, when a part were caught, and the rest driven away, by the hunters.

There are two kinds of them, differing only in habits. For some reason, now and then one of them usually wanders alone, and has only a hole in the bank of the river to live in, while they generally live in pairs or families, building houses and providing stores in companies—hence the terms "family" or "working beavers." The supposition is, that the bank beavers are such as have for some reason come short of a mate, or for idleness have been driven from the ponds and houses. They are the same animals every way, only exiles. The law of industry among the working beavers is well attested by hunters. Their dams or houses are built anew or remodelled every fall, in a way to suit the height

the water during the succeeding winter or spring. The object of the dam seems to be to regulate the height of water at their houses, where they have two or three berths at different heights, where they sleep high and dry, but with their tails in the water, thus being warned of any change in the rise and fall of water. Some houses stand six feet at least above the surface of the meadow, covered with mud, in the form of a round coal pit, but intersected with sticks of wood, so as to be strong, and the weight of three or four men makes no impression upon it.

A "full family," as hunters call them, consists of the parental pair and the males of the next generation, with their mates. When the tribe gets larger than this they colonize. Some time in the fall all single ones of both sexes congregate from considerable distances at the deepest lake in the vicinity, where they choose their mates; how ceremonious the nuptials we cannot say; they all go home, the female following her mate, and all go to work, first putting the house and dam in order for winter, then laying in their stock of wood, the bark of which is their winter food. They go up stream some three miles for their wood, and run it down to their houses, and then in some mysterious way make it lie in a pile at the bottom of the pond, outside of the house, where they may take it in any time in the winter for use. It is said that no human hands can disturb that wood with its rising and remaining afloat till the beaver has the handling of it again. But we do not feel quite sure what is fact and is conjecture respecting the beaver, whose works are so much in the night, and deep under water. The fall of the year is a busy time with them, and it interesting to see the new dams in process of building, as we sometimes find them across large boating streams, and not unfrequently boatmen and river drivers tear away their dams and get a good head of water for their use. They usually build at the outlet of natural ponds, and sometimes they flow large lakes and pieces of dead water, but are always moving and reconstructing. How they keep their teeth in order for so much eating, when the best steel would wear out, is a mystery. They cut logs sometimes a foot through, and every stroke of the tooth tells toward the job, and never does a tooth get dull as we can see. Two winters ago, near Ashland, some lumbermen encamped near one of their ponds. One afternoon they felled a tree across the lumber road, and before morning it was handsomely cut up and piled out of the road.

—*Aroostook (Maine) Pioneer.*

**THE LARK AND HER YOUNG ONES.**—A lark, who had a brood of young ones in a field of corn which was almost ripe, was very much concerned lest the reapers should come before the little ones were able to fly: so, whenever she went abroad to seek food, she told the young larks to be sure and listen to all the news. One day, while she was absent, the master of the field, and

his son came to look at the crop. "This corn," said the father, "is quite ready for the sickle; to-morrow go and ask our neighbours and friends to come and help us to reap it." When the old lark came home, the young ones, in a great fright, told her what they had heard, and begged her to remove them at once. The mother said "There is no cause for fear; for if he trust to his neighbours and friends for help, I am certain that the corn will not be reaped to-morrow." The next day the lark went abroad as usual, giving them the same directions as before. The farmer came to the field, and waited hour after hour for the expected help; but, finding the day passing away and the corn getting more ripe, and no one coming to his assistance, he said, "We must not, I find, depend upon our neighbours; so to-morrow go and ask our relations—our cousins and uncles—to come and help us." In still greater fear, the young larks told their mother what they had heard. "There is no occasion to hurry away yet," coolly answered the lark, "for I know that their cousins and uncles have work enough of their own." The lark again went abroad, and the farmer coming to the field, found his corn spoiling through over-ripeness. He waited for some time to see whether his relations appeared to help him; but finding that they did not come any more than his neighbours, he said, "My son, let us lose no more time; to-morrow we will cut down the corn ourselves." When this was reported to the old lark, she said, "Now, my young ones, the sooner we get away the better; for when a man determines to do his own work, you may be sure that he is in earnest." *What the lark said is quite true.*

**PRESERVATION OF STONE.**—At a late meeting of the Institute of British Architects, Sir Henry Rawlinson stated that the old Assyrians were acquainted with modes of preserving stone from decay. In Mesopotamia he had seen a huge rock the whole face of which was covered with inscriptions, coated over with some kind of varnish which he supposed was the silicate of lime. These inscriptions were executed 900 years before Christ were in a perfect state of preservation, and the varnish was harder than the limestone rock beneath it.

**"PLOWING A MAN IN."**—The Herts (England) Advertiser gives the following interesting example of the carrying out of an old English custom—a custom which we had referred to as still not unfrequently acted upon, in Scotland as well as England: The development of one of these good old friendly country customs took place on Wednesday, Nov. 6, in consequence of the recent entry or occupation of Mr. John Ransome, on Weathamsted Bury farm, which extends 450 acres. Although Mr. Ransome only came into this part of this country a few years since, a perfect stranger, he has, by his practical intelligence, perseverance, urbanity, and honorable conduct, gained the esteem and regard of



so many friends, that they were determined to show and testify their sense of the man by sending him their teams, which poured on to the farm from far and near at early dawn on the Wednesday morning in such numbers that it required Mr. Ransome to exercise a great deal of tact and management to place the right plows in the right places. To the uninitiated it may be proper to say it is an old and established custom in this country for the neighbors to send a plow and a team of horses to assist a tenant upon entering upon a new occupation of a farm, and on this occasion the muster was unprecedented; one hundred and forty-three plows, drawn (in round numbers) by 500 excellent horses, whose value might be set down at £15,000 (say \$75,000,) averaging each at £30, might be seen turning up mother earth to the extent of upwards of 130 acres, the plowing generally being unusually good. An excellent luncheon was provided at the farm house, and many gentlemen availed themselves of the offer of Mr. Ransome's kind hospitality, and who did not forget to drink the health and happiness of Mr. Ransome and his amiable lady.

**HOW SALT AND SALTPETRE ACT ON MEAT**—The properties and action of articles in frequent and common use, should be well understood, especially when those articles are used in the preparation of human food. Hence the following remarks from the *Farmer and Gardener* will be interesting and instructive to many of our readers: "The matter in which salt operates in its preservative functions is obvious. Salt, by its strong affinity, in the first place, extracts the juices from the substance of meat in sufficient quantity to form a saturated solution with the water contained in the juice, and the meat then absorbs the saturated brine in the place of the juice extracted by the salt in the first place. This matter incapable of putrefaction takes the place of that portion of the meat which is most perishable. Such, however, is not the only office of salt as a means of preserving the meat; it also acts by its astringency in contracting the fibres of the muscles, and so excludes the action of the air on the interior of the substance of the meat. The last mentioned operation of salt as an antiseptic is evinced by the diminution of the volume of meat to which it is applied.

The astringent action of saltpetre on meat is much greater than that of salt, and thereby renders the meat to which it is applied very hard; but in small quantities it considerably assists the antiseptic action of the salt, and it also prevents the destruction of the florid (or red) color of the meat by the application of salt. From the foregoing statement of the mode of operation of salt and saltpetre on meat, it will be perceived that the application of these matters deteriorates, in a considerable degree, the nutritive, and to some extent, the wholesome qualities of the meat; and therefore in their use, the quantity applied should be as small as possible consistent with the perfect preservation of the meat."

**INFLUENCE OF TREES UPON CLIMATE.**—Jochim Frederic Sahouw, Professor of Botany at Copenhagen, speaks as follows of the influence of forests upon the atmosphere:—"We find the most evident signs of it in the torrid zone. The forests increase the rain and moisture, and produce springs and running streams. Tracts destitute of woods become very strongly heated, the air above them ascends perpendicularly, and thus prevents the clouds from sinking, and the constant winds (trade winds or monsoons), where they can blow uninterruptedly over large surfaces, do not allow the transition of vapors into the form of drops. In the forests, on the contrary, the clothed soil does not become so heated, and, besides, the evaporation from the trees favors cooling: therefore, when the currents of air loaded with vapors reach the forests, they meet with that which condenses them and change into rain. Since, moreover, evaporation of the earth goes on more slowly beneath the trees, and since these also evaporate very copiously in a hot climate, the atmosphere in those forests has a high degree of humidity, this great humidity at the same time producing many springs and streams."

**SUDDEN COLD WEATHER.**—A writer in the *North American Review*, in discussing the subject of climatology, refers to the sudden "cold snaps" of our northern winters, and expresses the opinion that they are occasioned by the descent of the cold atmosphere above, or its transference from above. In illustration of this, it is stated that every few years, a storm like the one described below occurs, generally with less severity.—The weather of the last week may afford further illustration of this point and makes this matter of greater interest at the present time. In January, 1810, occurred the *cold Friday*, as it was for years called. The weather had been fair and pleasant, and on Thursday the temperature was uncommonly high, rising even to 60 degs., and the wind from the south. Toward sunset the appearance of a coming storm was obvious. It burst upon the western part of Massachusetts about sunset, or a little later, in a snow-squall from the north of west, of terrific violence, with the power and fury of a tornado. Desolation marked its course. The cold increased with great rapidity; at midnight the thermometer was at zero, and the next morning at 20 deg. below, in some places colder. Friday was insufferably cold; the wind was strong; the thermometer did not rise to zero over much of New England and New York, and in Canada it was still lower. The storm passed over a large portion of our country, and everywhere with a great degree of cold.

**WE SLEEP TOO LITTLE**—But if night, and not day, is the time to sleep, then it may be said that the general principle prevails that the amount of sleep should be regulated by the dividing line between light and darkness; and that

this view may be accepted as the correct one, is determined from analogy;—it being true that animals accept any act upon it in the temperate latitudes, which are supposed to be the most favorable for the development of the human organism in its highest proportions. Take the year together, day and night are about equal; and were mankind within these latitudes to live according to the laws of life and health in other directions, they would sleep while darkness is on the face of the earth, and be active only during the time in which light was abundant. As a habit and fashion with our people, we sleep too little. It is admitted by all those who are competent to speak on the subject, that the people of the United States, from day to day, not only do not get sufficient sleep, but they do not get sufficient rest. By the preponderance of the nervous over the vital temperament, they need all the recuperating benefits which sleep can offer each night as it passes. A far better rule would be at least to get eight hours' sleep, and including sleep, ten hours of incumbent rest. It is a sad mistake that some make, who suppose themselves qualified to speak on the subject, in affirming that persons of a highly-wrought, nervous temperament, need—as compared with those of a more lymphatic, or stolid organization—less sleep. The truth is, that where power is expended with great rapidity, by a constitutional law, it is regathered slowly;—the reaction after a while demanding much more time for the gathering up of new force, than the direct effort demands in expending that force. Thus a man of the nervous temperament, after he has established a habit of overdoing, recovers from the effect of such overaction more slowly than a man of different temperament would, if the balance between his power to do and his power to rest, is destroyed. As between the nervous and the lymphatic temperaments, therefore, where excess of work is demanded, it will always be seen that at the close of the day's labour, whether it has been of muscle or thought, the man of nervous temperament, who is tired, finds it difficult to fall to sleep, sleeps perturbedly, wakes up excitedly, and is more apt than otherwise to resort to stimulants to place himself in conditions of pleasurable activity. While the man of lymphatic temperament, when tired, falls asleep, sleeps soundly and uninterruptedly, and wakes up in the morning a new man. The facts are against the theory that nervous temperaments recuperate quickly from the fatigues to which their possessors are subjected. Three-fourths of our drunkards are from the ranks of the men of nervous temperament. Almost all opium-eaters in our country—and their name is Legion—are persons of the nervous or nervous-sanguine temperaments. Almost all the men in the country who become the victims of narcotic drug-medication, are of the nervous or nervous-sanguine temperaments. That the very general habit of dependence upon stimulants, or stimulo-narcotics,

is almost entirely confined to persons of the nervous temperament's, shows that the taxations to which they subject themselves, are not readily reacted from; and that under their methods of living, they find it difficult to depend upon the natural force to make good their losses within the time they allot for that purpose. The rule therefore, should be the other way from that which it is supposed to be—namely, that persons of highly wrought nervous organization need but little sleep. It should be the habit of such persons to sleep largely, and to insist upon such freedom from exercise, both of body and mind, and such external conditions of repose, as gradually to bring the brain to acknowledge such relations to the general structure, as will enable its various organs to become so refreshed, that they may, when duty is resumed, perform it with accustomed yet healthy vigor.—*Dr. J. C. Jackson*

**EARLY RISING.**—In New York there has been formed a Young Men's Early Rising Association, all the members of which are obliged to be up at a certain hour. It originated with about half-a-dozen men, who, having kept up this habit for some years, were surprised at its beneficial effects, and at the marked success in life of their associates.

**THE VICTORIA FALLS IN AFRICA.**—Some very interesting news has been received from Dr. Livingstone. His description of the Victoria Falls is worth quoting. He says: "After a second visit, I am inclined to believe that the Victoria Falls are the most wonderful in the world. It is the only grand sight the gentle Africans have to show, I tried to get them taken by an artist, but, to my regret, I failed. The breadth is not one thousand yards, as I conjectured, but between one statute and one geographical mile—we say eighteen hundred and sixty yards, by way of assisting the memory, but it is a little more. Then the river of this breadth leaps down, not one hundred feet, but three hundred and ten feet, *i. e.*, if my memory deceives me not, double the depth of Niagara. It is a few feet more, as the weight attached to our line rested on a slope near the bottom. Then the fissure into which it falls, though, when seen from Garden Island, looks like the letter L, is prolonged in the most remarkable zig-zag manner. The promontory formed by the zig-zag enabled me to see the falls on the east side as well as from the island, and being level, and of the same altitude as the bed of the river above the falls, you can walk along and see the river some three hundred feet before you, and on both sides of you, jammed in a space of twenty or thirty yards. The base of one promontory is only one hundred and thirty paces from a dry fissure, and the base of another is only four hundred paces broad, measuring from the fall fissure to it. Nothing but several oil paintings could give an idea of the wonderful scene; and it was solely against my will that I had to forego this, which would have



been a feather in the cap of our expedition, and a good thing for our artist as well. The river was now very low—never saw it so dry; indeed, people could wade from the north bank to my Garden island. This enabled me to see the whole thing plainly, but even now there were 800 feet of waterfall. The columns of vapour were fewer—only two good ones, I think. I could not measure their height—probably over 200 feet. The lips of the fissure at Garden Island, when measured by sextants, were eighty feet; but we could not throw a stone across, so it may be more. Come when you may, you will not be disappointed by the falls of Victoria. We bought canoes at Sinamanes, and dropped down the stream to below Chicona. Kersale has no impediment, but a basaltic dyke a little below makes it a dangerous rapid for canoes. There is another dangerous rapid for canoes at Mburuma's, but a boat would go through easily. The canoes were but six inches above the water, and easily filled."

**VENTILATION OF THE APPLE BARREL.**—By this we mean the boring of holes in the head of staves of the barrels that will allow the escape of the moisture that is constantly passing off from the newly gathered fruit. We hazard nothing in the statement that one half the fruit sent to this market this season, so far, has been materially injured from this cause. The effect of confined vapor upon the apple is not at once apparent. The fruit appears uncommonly bright on the first opening—but as the surface dries off the apple begins to grow dull looking, and if a light skinned apple, in day or two will present the appearance of half baked fruit. But this steaming from confinement, not only injures the sale of fruit, but to the great disappointment of the consumer, his fruit does not keep as he supposed it would, and as the variety of apple he purchased led him to suppose it would. Premature decay is soon to follow as a consequence of this want of ventilation.—*Chicago Fruit Dealer.*

**HOW TO HANDLE FIREARMS SAFELY.**—An old sport-man gives the following advice in reference to the safe handling of percussion guns:—When the gun is charged, never allow the lock to be in any other state than at half cock, except at the moment before firing. The reason why this rule should be adopted and religiously observed are briefly these: the lock is so constructed that when at half cock (provided it is good for anything, and no other should ever be used) it cannot be moved from that point toward the cap to explode it in any possible way. You may strike it violently, and it will not yield until the lock itself breaks in pieces. If, by any accident it is moved in the opposite direction, it must go back until it is fully cocked, and must remain there until the trigger is touched. If it does not go back to that point, it cannot possibly, in returning, pass the point of its first position—that of half cock—unless the trigger is touched at the moment, which would seldom if ever happen.

**AN EGG IN A BOTTLE.**—To accomplish this seemingly incredible act requires the following preparation. You must take an egg and soak it in vinegar, and in process of time its shell will become quite soft, so that it may be extended lengthwise without breaking; then insert it into the neck of a small white bottle, and upon pouring cold water upon it, it will assume its former figure and hardness. This is really a curiosity, and baffles those who are not in the secret to find out how it is accomplished.

**WHAT INFLUENCES OUR CLIMATE.**—I cannot omit directing the reader's attention to the influence the far-distant barrier of Central America has upon the climate of great Britain. Supposing you narrow belt of land to be suddenly whelmed by the ocean; then, instead of circuitously winding round the Gulf of Mexico, the heated waters of the equatorial current would naturally flow into the Pacific, and the Gulf stream no longer exist. We should not only lose the benefit of its warm current, but cold polar streams, descending further to the south, would take its place, and be ultimately driven by the westerly winds against our coasts. Our climate would then resemble that of Newfoundland, and our ports be blocked up during many months by enormous masses of ice. Under these altered circumstances, England would no longer be the grand emporium of trade and industry, and would finally dwindle down from her imperial station to an insignificant dependency of some other country more favored by Nature.—*Hartwig's Sea and its Wonders.*

**TO PREVENT FLIES FROM TEAZING HORSES.**—Take two or three small handfuls of walnut leaves, upon which pour two or three quarts of soft cold water; let it infuse one night, and pour the whole next morning into a kettle, and let it boil for fifteen minutes. When cold, it will be fit for use. No more is required than to wet a sponge, and before the horse goes out of the stable, let those parts which are most irritated be smeared over with the liquor.

**BLISTERED FEET.**—A writer says:—"I had for several years two sons at school at Geneva, Switzerland. In their vacations they, in company with their tutor, made excursions through Switzerland, Italy, Germany, &c, on foot; bearing their knapsacks containing their necessary wants for a month. They were provided with a small bar of common brown soap, and before putting on their stockings turned them inside out, and rubbed the soap well into the threads of them; consequently they never became foot sore, or had blistered feet.

**THE LABOURER ON THE CONTINENT.**—The system of small farms (*la petite culture*) so generally prevalent throughout the Continent, markedly so in France and Belgium, induces a condition of things vastly different from that prevalent in this country; and hence we find that the class of

men who hire themselves out for farm labour is not in any way so important as the class with us. Farm labourers are not numerous, as large farmers requiring their services are anything but numerous themselves. Their place is taken by the body of peasant proprietors, who may be said, in general terms, to represent our agricultural labourer class. I have travelled pretty extensively on the Continent, and I confess to having formed a very favourable opinion as to the condition of the agriculturists of the lower ranks. Time will only permit me however to glance at their condition in Belgium; more especially that part of it—Flanders—where cultivation stands so deservedly high. Wages are not great; a farmer in the neighbourhood of Courtrai, who farmed about 90 acres, told me that he gave his labourers 67 centimes per day, that is about 7d. per day with an ample supply of provision—meat, bread and soup. From a franc to a franc and a quarter may be stated perhaps as the average without provisions. Nearly all the labourers have small plots of ground, which they have time to cultivate, and which they do with the most pains-taking care. That the condition of the labourer is in every way a comfortable one, even a cursory investigation will easily show. The clothing is wonderfully good, far above—especially in the linen department—that of our labourers. In the districts where the small plots of land are cultivated by the peasant proprietors pleasant signs of personal and household comfort abound everywhere. The village streets through which one passes how little of the squalid untidiness which too often greets the eye of the traveller in this country; and seldom is he offended with the sight of children bouncing about in all the Arab freedom of dirt and rags which characterises too many of the rising youths of our own villages. Nor, let me add—which possibly is one grand reason of all this comfort—do you see the drunkard staggering through the streets in the hopelessness of confirmed degradation. The cottages are small, and scantily furnished, according to our ideas of furnishing; but a scrupulous cleanliness atones for this, and adds a charm which abundance of furnished wealth without it would not give. The personal dress of both sexes gives you the idea of great comfort, although in the materials employed you have no evidence of the abundance of money. It simply tells of small funds laid out to highest economical advantage, than which nothing I conceive is more satisfactory in peasant life.—*Mr R. S. Burn before the London Farmer's Club.*

**WHAT THE CHINESE EAT.**—Rice is the staple article of food with all these Chinamen, as with the coolies and farmers, the only difference being that they have their fish and vegetables in quantity enough to be served up on separate dishes, and of much more expensive kinds than those bought by the poorer men. A choice addition consists of thin slices of pork fat, rolled up, cut

into lengths of about an inch, and until most of the grease is drawn out, leaving the rest crisp and brown, and not unpalatable. Bread is never eaten in the provinces south of Shantung, its place being entirely taken by rice; but there is a sort of dumpling made of flour, sometimes plain and sometimes with mincemeat or dried fruit in it. Small cakes are also made from rice and barley flour with seeds like carraways strewed on the top. Heavy sponge cakes made in a mould, and cakes made from bean flour, are also in request. The Chinese aristocrat never feasts (if he can help it) without roast sucking pig for one dish, and of roast pig the part he prefers is the crackling. Every reading child knows about bird's-nest soup and the Indian sea slug biche-de-mer. Eggs are baked in clay until quite hard, and eaten in slices. Deer's sinews and pig's ears are great favourites. They have also excellent soups, thickened with first-rate vermicelli. In Foo-chow-foo bacon and hams are prepared, which many pronounce to be as good as English; at all events, they are famous all over China, and are always a very acceptable present to the residents at the other ports. They have even been exported to America, though, no doubt, only as curiosities. It is said that the art of curing hams was introduced into Foo-chow by a resident English lady some twelve years ago.—*All the Year Round.*

To drive and keep rats from corn-cribs and granaries, place some gas-tar in them, and daub some in their holes, and they will leave the premises at once. The tar can be obtained at any place where gas is manufactured.

**TO REMOVE CHAFF FROM ANIMALS' EYES.**—Mr. C. E. Todd states, in the Ohio Farmer, that he had a valuable cow which became partly blinded with oat chaff, and tried the various remedies commonly prescribed, but to no effect. He then took a silk pocket-handkerchief, drew it tightly over the end of the fore-finger, and after raising the eye-lid as much as practicable, thrust the covered finger carefully into the eye. The chaff adhering to the silk was at once removed.

**NATURAL FOUNTAINS IN ICELAND.**—Two of these fountains, within a yard of each other, erupted alternately—the larger one vomiting a column ten feet high for the space of about four minutes, when it would entirely subside, and then the smaller one took up the running for about three minutes, ejecting a column of about five feet: their regularity in time and force was perfect. What gives rise to this remarkable phenomenon I will not attempt to decide, but there are reliable accounts of their regular habits for the last hundred years.—*Iceland; its Volcanoes, Geysers and Glaciers.*

**THE CONDITIONS OF LIFE.**—It is hard to know whether more to admire the variety of the form under which food is supplied to the animal creation or the simplicity of the fundamental



plan. The nutritious substances baffle calculation, and embrace the utmost diversity of kinds, adapted to every variety of climate, circumstance or habit. While the living organism, on the one hand, can build up a solid frame from liquid materials, on the other, it can pour iron through its veins, and reduce the hardest textures into blood. There is a squirrel in Africa that feeds on elephant's tusks; and the mark of his teeth is a welcome sight to the ivory-collector. The cunning creature selects—for there is scope for epicurism even in this hard fare—the tusks which are richest in animal matter, and which are therefore, the most valuable. But under what diversity of form it may be presented, food is in its essential nature always the same. To give us active bodies, it must be an active substance; that is, it must consist of elements which tend to change through the operation of their chemical affinities. To furnish food for animal life is in one aspect a simple problem, though wrought out in infinite complexity. It is to provide matter in unstable equilibrium, as it is said, or constantly tend to assume new forms, like waves raised in water by the wind. Yet it must not be utterly incapable of retaining its existing form, but should be delicately balanced, as it were, so that it will admit of being transferred and moulded in various way, unaltered, and yet will undergo change immediately when certain conditions are fulfilled. Given a substance thus composed, and there is food. For we must not limit our ideas here to that which happens to be food for us, or for the creatures likeliest to ourselves. Food is found by some creature or other in circumstances the most widely diverse. There is hardly a poison known that does not afford sustenance to some form of life. Corrosive minerals in solution afford nutriment to peculiar kinds of mold or cell plants. Even the gastric juice—the “universal solvent”—will sustain, without losing its properties, special fungus. The fable of Mithridates, who accustomed himself to eat all deadly things with impunity, is more than realized in nature. Life in its widest sense almost refuses to recognize a poison. What is death to one organism supports another. Thus many diseases—an ever-increasing number of them indeed—are found to consist in the development of parasites; a new and hostile life invading the old, and flourishing in its destruction. And some of the most virulent vegetable poisons differ but slightly in composition from perfectly wholesome substances.—*Cornhill Magazine*.

**A MICROSCOPIC AGE.**—A correspondent of *St. James' Magazine* says:—“If I were to point out what is the most striking characteristic of the present century, I do not think that I should dwell upon it as a scientific age, or as a literary age, or as a missionary age (by all which epithets it has been described), but as a microscopic age. Nothing appears to be so

wonderful as the changes which have occurred in the common doctrine of magnitudes. Little things have become great and great things have become small. As the modern science of chemistry could not spring into existence until an accurate balance was invented, so the modern science of physiology and the following theory of mortal life, as we now comprehend it, has grown out of the microscope. This is a literal fact, and it is symbolic of a much wider one,—that all modern research has become microscopic. Painting has become microscope, and gives us details of mosses and lichens, which a half century ago would be laughed at as a useless waste of time. History has become microscopic, and enlivens the descriptions of courts and senates with a minute account of carpet and cakes, dresses, dinners, and other trivialities. Poetry has become microscopic and tells us that the meanest flower that breathes can give to the bard thoughts that do lie too deep for tears.”

**A NEW USE FOR APPLES.**—A country paper says:—“We are threatened with a cider famine, not from failure of the apples, although a partial crop, but because they are likely to be applied to a more profitable purpose (so far as the growers are concerned) than in making a household beverage. It seems that the Manchester calico dyers and printers have discovered that apple juices supply a desideratum long wanted in making fast colours for their printed cottons, and numbers of them have been in Devonshire and the lower parts of Somersetshire, buying up all the apples they can get, and giving such a price for them as in the dearest years hitherto known has not been offered. We know of one farmer in Devonshire who has a large orchard, for the produce of which he never before received more than £250, and yet he has sold it this year to a Manchester man for £360. There can be no doubt that the discovery will create quite a revolution in the apple trade.

**LIGHT IN THE SEA.**—A paper on the nature of the Deep Sea Bed, by Dr. Wallich, was lately read at a meeting of the Royal Institution of Great Britain. The following passage occurred in it:—“Light, or rather the absence of it, can hardly be said to determine, in any important degree, the distribution and limitation of the lower forms of animal life. Light is not essential even in the case of some of the lower orders. A large class of creatures, both terrestrial and marine, possess no true organs of vision, although there is good reason for believing that they do possess some special sensory apparatus susceptible to the influence of light; whilst certain creatures, whose habitation is in subterranean caves or lakes, as in the Magdalena near Adelsburg, and the Great Mammoth caves in Kentucky, either possess them in so rudimentary a state, as to prove clearly that the absence or imperfect development of the sense may be compensated for by the higher development of other

senses. It is impossible at present to say to what depth light penetrates in the sea. The photographic art will, no doubt, one day solve the problem. But it is almost certain that a limit is attained, and that, moreover, long before the deep recesses gaged by the sounding machines are reached, wherethe light-giving portion of the ray cannot penetrate even in its most attenuated condition; and yet, as shall hereafter be shown, creatures have been found down in those profound and dark abysses whose coloring is as delicate and varied as if they had passed their existence under the bright influence of a summer sun."

**A REMEDY FOR SLEEPLESSNESS**—How to get sleep is to many persons a matter of great importance. Nervous persons, who are troubled with wakefulness and excitability, usually have a tendency of blood on the brain, with cold extremities. The pressure of blood on the brain keeps it in a stimulated or wakeful state, and the pulsations in the head are often painful. Let such rise and chafe the body and extremities with a brush or towel, or rub smartly with the hands, to promote circulation, and withdraw the excessive amount blood from the brain, and they will fall asleep in a few moments. A cold bath, or a sponge bath and rubbing, or a good run, or a rapid walk in the open air, or going up or down stairs a few times just before retiring, will aid in equalizing circulation and promoting sleep. These rules are simple, and easy of application in castle or cabin, mansion or cottage, and may minister to the comfort of thousands who would freely expend money for an anodyne to promote "Nature's sweet restorer, balmy sleep."

**BATHING IN THE JORDAN.**—The shore was muddy with the feet of the pilgrims, and the river so rapid that I hardly dared to get beyond the mud. I did manage to take a plunge in head-foremost, but I was forced to wade out through the dirt and slush, so that I found it difficult to make my feet and legs clean enough for my shoes and stockings; and then, moreover, the flies plagued me most unmercifully. I found that with them, bathing in Jordan has come to be much the same as baptism with us. It hardly means immersion. No doubt that they do take off their shoes and stockings, but they do not strip and go bodily into the water. —*London Review.*

**STEAM PLOWING**—I cannot conclude this notice of the steam engine without observing the changes it is destined to effect in the cultivation of the soil. It is but a short time since it was thought inapplicable to agricultural purposes from its great weight and expense. But more recent experience has proved this to be a mistake, and ready in most districts we find that it has been pressed into the service of the farm. The small motive, mounted on a frame with four

wheels, travels from village to village with its attendant, the thrashing machine, performing the operations of thrashing, winnowing and cleaning at less than one half the cost by the old and tedious process of hand labor. Its application to plowing and tilling on a large scale is, in my opinion, still in its infancy; and I doubt not that many members of this association will live to see the steam plow in operation over the whole length and breadth of the land. Much has to be done before this important change can be successfully accomplished; but, with the aid of the agriculturist preparing the land so as to meet the requirements of the steam machinery, we may reasonably look forward to a new era in the cultivation of the soil.—*Id.*

**CONSTITUTION OF THE SUN.**—Our knowledge of the physical constitution of the central body of our system seems likely, at the present time, to be much increased. The spots on the sun's disk when noticed by Galileo and his contemporaries, and enabled them to ascertain the time of its rotation and the inclination of its axis. They also correctly inferred, from their appearance, the existence of a luminous envelope, in which funnel-shaped depressions revealed a solid and dark nucleus. Just a century ago, Alexander Wilson indicated the presence of a second and less luminous envelope beneath the outer stratum, and his discovery was confirmed by Sir William Herschel, who was led to assume the presence of a double stratum of coats, the upper intensely luminous, the lower gray, and forming the penumbra of the spots. Observations during eclipses have rendered probable the supposition that a third and outermost stratum of imperfect transparency encloses concentrically the other envelopes. Still more recently, the remarkable discoveries of Kirchhoff and Bunsen require us to believe that a solid or liquid photosphere is seen through an atmosphere containing iron, sodium, lithium, and other metals in a vaporous condition.

We must still wait for the application of more perfect instruments, and especially for the careful registering of the appearances of the sun by the photoheliograph of Sir John Herschel, so ably employed by Mr. Warren de la Rue, Mr. Welsh and others, before we can expect a solution of all the problems thus suggested.—*Id.*

**THE HOUSE SPARROW.**—As Mr. Broderip was passing one day along the footway that borders the National Gallery, he saw a sparrow fly down to the neighbouring hackney carriage stand, and pick up a very long straw, with which it flew, with some labour, towards the building. The long, streaming straw attracted the attention of some of the pedestrians, who stopped and looked at the little loaded bird, who was directing its flight towards the portico of the gallery; but finding its motions watched, it turned short round and pitched with its straw on one of the window-sills, and the people then passed on. Presently it flew again towards the portico; but, the people again stopping and looking—for if one passenger stops and looks up in a great



London thoroughfare, you have in a very few moments an increasing crowd—it flew back to another window, and the second lot of gazers went their way. The little bird then started again with its straw towards one of the same pillars, and cutting round it, so as to avoid prying eyes as much as possible, bore it to the capital of one of the pillars, and disappeared, straw and all, into a snug nook made by a part of the projecting ornament, which it had chosen as the place for building its nest. "The wary bird," adds Mr. Broderip, "was not disposed to let an inquisitive public know the way to its home. On many other occasions I have observed these and other birds remain waiting about a long time with nest materials and food in their bills, when they have perceived that I was watching them; but the moment I turned my head they were off with their burden to the nest. This would not be worth mentioning, were it not so difficult to find persons who will use their eyes to some purpose."—*Cassell's Popular Natural History*.

**FARMERS' NEWS.**—One plant of the weed black mustard (*Sinapis nigra*) gives 200 flowers: and each giving six seeds, 1,200 seeds are produced. One plant of the tare (*Ervum tetraspermum*) gives sixty flowers: and each flower giving three seeds, 180 seeds are produced. The seeds of hemp retain their germinating power for three years, rape the same, buckwheat two to three, barley three, cabbage five to six, and beans and peas five to six. Sixty feet superficial should be allowed for each animal in the shed, and 240 feet in the courtyard. A beater thrashing machine can thrash out 7 qrs. 1 bushel 28 lbs. of wheat (taken after beans) per hour.

**TO STOP BLEEDING.**—Asa Kemper, Ross County, Ohio, writes to the *American Agriculturalist*, that bleeding from wound on man or beast, may be stopped by a mixture of wheat flour and common salt, in equal parts, bound on with a cloth. If the bleeding be profuse, use a large quantity, say from one to three pints. It may be left for hours, even days if necessary. In this manner he saved the life of a horse, which was bleeding from a wounded artery; the bleeding ceased in five minutes after this application. It was left on three days, when it worked loose, and was easily removed, and the wound soon healed.

**LOCALITIES OF FISH.**—The fact that fish herd together in great flocks or nations seems now to be well established. All the inhabitants of the great deep, from the mighty whale down to the minnow, live in what may be termed colonies. Thus we have the term "a school of whales." We have also the young salmon in shoals—each year's growth in separate companies, and every fish as local in its dwelling-place as men are. We know, too, that the herrings live also in nations, which arrive at maturity in vast groups at

different periods of the season. The same laws govern the crustaceæ. Persons who deal in shell fish can easily tell the different localities whence they derive their different supplies. A Scotch lobster can be readily distinguished from a Norway one, and "a native" oyster differs considerably from a "scuttle moun'b." These are all points which ought long ago to have led to a better understanding of the natural and economic history of fish. This ignorance has well nigh ruined our most valuable fisheries. We have been trading for years in the belief that the supply was inexhaustible, and are but beginning to find out that it is even possible to exhaust the sea. The German Ocean has been so long the fishing pond of Europe, that we can scarcely wonder, considering the wealth that has been drawn from its depths, that its supplies are beginning to fail us. There can be no doubt, however, that other sources of supply will be discovered; if so, we can only hope that some method will be observed in harrying the nest, in order that the supply may be made to go as far as possible.—*London Review*.

### Tobacco for Sheep Ticks.

**EDITOR OR FARMER.**—I notice in a late number of the *Farmer* an inquiry in regard to the use of tobacco for killing ticks upon lambs, of which the writer Geo. P. Morse, thinks is a sure remedy for killing both the tick and the lambs.

Now, I will give my experience in the use of tobacco on lambs: I have made it a practice for years whenever my sheep were ticky, to dip the lambs in tobacco juice. I take about four pounds of what the merchants term poor tobacco. Place in a caldron kettle; boil until you have the strength, then reduce it nearly one half with water that will be a sufficient quantity for one hundred lambs. This will kill the ticks sure and leave the animal healthy and vigorous; at least such has been the case with my flock. My mode is this: After shearing let all my sheep go in one flock for four or five weeks; the tick will all leave the old sheep and go on the lambs. Then prepare as above and dip your lambs.—By so doing, you will clear your flock of an enemy which has been very destructive in many fine flocks of sheep. Try and See.

M L. RAY.

Concord, April, 1861.—*Michigan Farmer*.

**THE STUDY OF SCIENCE.**—Science is worthy of study by all men, because it is so intimately associated with all the pursuits of life. The whole animate and inanimate creation is embraced within its folds. It affords ample scope for the exercise of the most comprehensive and refined intellects, as well as those of humble and moderate pretensions. The mechanic and chemist, the poet and scholar, the manufacturer and merchant, can find, in the pursuit of science, a boundless source of pleasure and profit.

**INTERNAL HEAT OF THE EARTH.**—It is well known that the temperature increases, as we descend through the earth's crust, from a certain point near the surface, at which the temperature is constant. In various mines, borings, and Artesian wells, the temperature has been found to increase about  $1^{\circ}$  Fah. for every sixty or sixty-five feet of descent. In some carefully-conducted experiments during the sinking of Dukinfield Deep Mine—one of the deepest pits in this country—it was found that a mean increase of about  $1^{\circ}$  in seventy-one feet occurred. If we take the ratio thus indicated, and assume it to extend to much greater depths, we should reach at two and a half miles from the surface strata at the temperature of boiling water; and at the depths of about fifty or sixty miles the temperature would be sufficient to melt, under the ordinary pressure of the atmosphere, the hardest rocks. Reasoning from these facts, it would appear that the mass of the globe, at no great depth, must be in a fluid state. But this deduction requires to be modified by other considerations, viz., the influence of pressure on the fusing point, and the relative conductivity of the rocks from the earth's crust. To solve these questions a series of important experiments were instituted by Mr. Hopkins, in the prosecution of which Dr. Joule and myself took part; and after a long and laborious investigation, it was found that the temperature of fluidity increased about  $1^{\circ}$  Fah., for every 500 lbs. pressure in the case of spermaceti, beeswax and other similar substances. However, on extending these experiments to less compressible substances, such as tin and barytes, a similar increase was not observed. But this series of experiments has been unavoidably interrupted; nor is the series on the conductivity of rocks entirely finished. Until they have been completed by Mr. Hopkins, we can only make a partial use of them, in forming an opinion of the thickness of the earth's solid crust. Judging, however, alone from the greater conductivity of the igneous rocks, we may calculate that the thickness cannot possibly be less than nearly three times as great as that calculated in the usual suppositions of the conductive power of the terrestrial mass at enormous depths, being no greater than that of the superficial sedimentary beds. Other modes of investigation which Mr. Hopkins has brought to bear on this question appear to lead to the conclusion that the thickness of the earth's crust is much greater than that above stated. This would require us to assume that a part of the heat in the crust is due to superficial and external rather than central causes. This does not bear directly against the doctrine of central heat, but shows that only a part of the increase of temperature observed in mines and deep wells is due to the outward flow of that heat.—*Fairbairn's Address before the British Association.*

## Editorial Notices, &c.

### AGRICULTURAL SEED AND IMPLEMENT STORE.

It will be seen from an advertisement in another column, that Mr. James Fleming has taken into Partnership Mr. G. W. Buckland in the General Seed business, wholesale and retail. Mr. Buckland has had two years experience in one of the largest and oldest Seed Establishments in London, England; and Mr. Fleming is well known throughout the Province as a Florist and Horticulturist, and for having successfully carried on the business of a Seedsman in this city, for more than a quarter of a century. The new Firm contemplate extending their business operations, and have accordingly rented a portion of the new Agricultural Hall in the course of erection by the Board of Agriculture, on the corner of Yonge and Queen streets, which they hope to commence occupying about midsummer next. In addition to a varied and extensive stock of agricultural and horticultural seeds, they purpose keeping on hand a selected assortment of the various tools and implements required by the farmer and gardener. Such an establishment in the same building, with an Agricultural Museum, which the Board has resolved on commencing, must prove both interesting and useful to a large portion of our population, especially to all such as are directly engaged in rural pursuits.

### Notice of Co-Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

### NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada, will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsman and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.



**BOARD OF AGRICULTURE.**

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,

Toronto, 1861.

Secretary.

### International Exhibition, London, 1862.

THE Commissioners for Canada at the INTERNATIONAL EXHIBITION of 1862, give notice to all parties desirous of exhibiting Canadian products, whether application has been already made for the exhibition of the same or not, that such articles may be sent in for examination and approval to the following places, at any time between the TENTH DAY of FEBRUARY next, and the undermentioned dates, viz:—

IN CANADA WEST.—London, 18th February; Hamilton, 20th February; Toronto, 22nd February; Kingston, 25th February, and Ottawa, 28th February.

IN CANADA EAST.—Quebec, 14th February; Three Rivers, 18th February; St. Hyacinthe, 22nd February; Sherbrooke, 25th February next; and Montreal, 3rd and 4th March next.

Articles will be received and stored at the Depots of the Grand Trunk Railway Company at London, Toronto, Kingston, Quebec, Point Levi, Sherbrooke and St. Hyacinthe.

The Commissioners will begin their examinations at 10 o'clock, A. M., of each day named.

Intending exhibitors must deliver the articles for exhibition at the above named places, free of charge. Should they not be approved, the Grand Trunk Railway will return them free of charge, to any depot on their line from which they have been sent.

Parties sending in Grain or Woods are requested to transmit a certificate, stating the species and varieties, and where grown. Woods should be sent of the usual dimensions for commerce, and Her Majesty's Commissioners have expressed a desire that they be shown in planks 4 inches thick, showing the sap on both sides, or in 4 inch scantling, and accompanied, wherever practicable, by twigs with leaves or flowers.

Parties desirous of further information, may apply, concerning Minerals and Specimens of Economic Geology, to Sir W. E. Logan, Montreal; concerning products of the Forests and Waters, to Dr. Tache, Quebec, or Dr. Hurlburt, Hamilton; concerning Agricultural produce, to Hon. L. V. Sicotte, St. Hyacinthe, and Col. Thomson, Toronto concerning articles of Canadian Manufacture, to Dr. Beatty, Cobourg, or to the Secretary, Montreal, to whom also, communications on all other business of the Commission are to be addressed.

R. CHAMBERLIN, Com'r, Secretary.  
Montreal, December 12, 1861.

### THE INTERNATIONAL EXHIBITION OF 1862.

THE UNITED AGRICULTURAL SOCIETIES OF WENTWORTH and HAMILTON will hold an Exhibition of Wheat at Crann's Hotel in the City of Hamilton, on Saturday the 18th day of January, 1862, with a view of obtaining the best samples to forward to the International Exhibition, London,

|                                       |     |
|---------------------------------------|-----|
| Best two bushels Soule's Winter Wheat | \$6 |
| " " " Red Chaff " "                   | 6   |
| " " " Blue Stem " "                   | 6   |
| " " " Golden Drop, Spring             | 6   |
| " " " Fife " "                        | 6   |

The Wheat obtaining the prizes to become the property of the Society. Members of either of the Societies may compete.

The wheat to be the property of the exhibitor, and grown in the County in 1861.

Entries will be received by the Secretary until 10 o'clock, a. m., of the day of Show.

WM. A. COOLEY,  
Sec., U. S. W. & H.

Ancaster, Nov. 25th, 1861.

### FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several pure Durham bull calves to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the well known DUCHESS tribe, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—First come, first served.

Waterdown, Nov. 14, 1861.

4-t.

### THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

JOHN SNELL,  
Edmonton, P. O., C. W.

### VETERINARY SURGEON.

ANDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a Veterinary Infirmary.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

**FOR SALE.**

**A FEW PURE-BRED SOUTH-DOWN RAMS**  
and Ewe Lambs, from

**IMPORTED STOCK,**

Selected from the Best Flock-dealers in Dorset,  
Wilts, and Hants.

The Subscriber will Warrant these Lambs to  
produce as much Wool and Mutton, and of  
equal Quality, as those of Jonas Webb, or any  
other Flock of the same kind and number in  
England.

JOHN SPENCER,  
Brooklin, Post Office,

Oct. 12th, 1861. Ontario County C. W.

**AYRSHIRE BULL FOR SALE.**

**MR.** Denison, of Dover Court, offers for Sale  
a thorough bred Ayrshire Bull, bred by  
the celebrated Ayrshire breeder, John Dodd,  
Esq., of Montreal. The bull is 3 years old, and  
can be delivered at or after the Show at Lon-  
don, in September.

Toronto, Aug., 1861.

**THE****JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,****FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs  
of ten or more at 75 cents. per copy; to  
members of Mechanics' Institutes, and of Liter-  
ary, Scientific, and Agricultural Societies,  
through their Secretary or other officer, 50 cents  
per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures  
for Upper Canada, by W. C. CHEWETT & Co.,  
King Street East, Toronto.

**FOR SALE.**

**A** LOT of thorough bred ESSEX Pigs,—bred  
from recently imported 1st prize animals  
and who have this season taken premiums at  
both Township, County, and Provincial Exhi-  
bition.

JAMES COWAN.

Clochmor, Galt P. O., Oct. 19, 1861.

**Contents of this Number.**

|                                                                                | PAGE. |
|--------------------------------------------------------------------------------|-------|
| On Permanently Locating Agricultural Exhibitions .....                         | 1     |
| Dairy Management .....                                                         | 2     |
| Death of the Prince Consort .....                                              | 3     |
| The Agricultural Statute—Public Meeting .....                                  | 4     |
| Winter Management of Sheep .....                                               | 6     |
| <b>AGRICULTURAL INTELLIGENCE:</b>                                              |       |
| Smithfield Fat Cattle Show .....                                               | 7     |
| Royal Dublin Society—Winter Show .....                                         | 10    |
| Profits of a Poorhouse Farm .....                                              | 12    |
| Birmingham Cattle Show .....                                                   | 13    |
| The late Lord Berwick's Sale of Herefords .....                                | 14    |
| Recent English Lamb Lettings .....                                             | 15    |
| European Shepherds .....                                                       | 15    |
| <b>HORTICULTURAL:</b>                                                          |       |
| On obtaining a New and Superior Parsnip .....                                  | 16    |
| Pomological gossip,—Pears, Grapes, &c. ..                                      | 17    |
| Raising Figs at the North .....                                                | 17    |
| Trees for Winter .....                                                         | 18    |
| Concord vs. Delaware grapes .....                                              | 18    |
| <b>THE DAIRY:</b>                                                              |       |
| Kindness to Milch Cows .....                                                   | 19    |
| Health of Cows .....                                                           | 19    |
| Poor Milkers .....                                                             | 19    |
| <b>THE POULTRY YARD:</b>                                                       |       |
| Fattening Turkeys, Cramming Poultry, Im-<br>paction of the Crop in Fowls ..... | 20    |
| <b>THE APIARY:</b>                                                             |       |
| Wintering of Bees .....                                                        | 21    |
| MISCELLANEOUS .....                                                            | 21    |
| EDITORIAL NOTICES, &c. ....                                                    | 30    |

**FOR SALE.**

**A** LOT of thorough bred improved Berkshire  
Pigs of various ages.

R. L. DENISON,  
Dover Court.

Toronto, Aug., 1861.

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of  
each month.

**Subscription**—Half a dollar per annum for  
Single copies; Eleven copies for Five Dollars  
Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University  
College, Toronto, and Hugh C. Thomson, Secre-  
tary of the Board of Agriculture, Toronto, to  
whom all orders and remittances are to be ad-  
dressed.

Printed at the "Guardian" Steam Press King  
Street East, Toronto.



THE  
**Canadian Agriculturist,**

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, JANUARY 16, 1861.

No. 2.

**Land Drainage.**

It is now a universally admitted truth by all who understand the subject, that in the temperate zone of Europe and America the under drainage of land is the foundation of all agricultural improvement. Hence laws have been passed for enabling the owners and occupiers of land to facilitate this essential operation; and the British Government have loaned large sums of money, to be repaid by an annual rent charge extending through a long series of years, for the purpose of extending an improved system of land-drainage. Some aid of this nature would no doubt be of immense benefit to Canada, provided sufficient checks could be brought to bear to prevent abuses. At best the draining of a young and extensive country like this must necessarily be a slow and progressive work, since the capital required for such operations, on an extensive scale, is very great, and at present wholly beyond the reach of the proprietors of the soil. Notwithstanding all that has been done in the old country in this way during the present century, it is astonishing to find this essential means of agricultural amelioration, can only be said to have made a commencement. Imperfect, superficial drainage is, as yet, comparatively limited. From an elaborate paper recently read before the Central Farmers' Club in London, by that eminent draining engineer, Mr. Bailey Denton, we condense the following information:

It appears that the total extent of wet lands drained or capable of improvement by draining in Great Britain alone is estimated at 22,890,000 acres, out of the total area of 56,352,000. The extent of land already permanently drained will not reach  $1\frac{1}{2}$  millions up to the present time, so that there remains undrained more than 21 millions of acres. The remaining  $33\frac{1}{2}$  millions of acres consist, for the most part, of free soils, naturally dry, which absorb and infiltrate to various depths, beyond the reach of evaporation, from one-tenth to half of the rain that falls on the surface, the rest of the rainfall being taken up by vegetation or evaporation, or passing off the surface without entering it in times of heavy and sudden rainfalls. The other portion of the  $33\frac{1}{2}$  millions consists of mountainous lands, of rock formations, the surfaces of which having rapid slopes, throw off the rainfall in very large proportions, namely, from one third to four fifths of the rainfall. Within the bounds of these steep lands there are bogs and moors, which catch a large quantity of the water thrown from the mountain slopes, and give off by evaporation much more moisture than the rain which falls directly upon them. The extent of the surcharged free soils drained or requiring draining is about 12 millions out of 23 millions of wet lands, leaving of clays about 11 millions. These figures are set forth to draw attention to the magnitude of the field to which under-drainage is gradually extending itself, and for which provision must

be made sooner or later in the main arteries and outfalls. The depth of drains required by the commissioners, before a rent charge on the land is allowed must not be less than four feet.

From the above facts it appears that in Britain there is enormous scope for the improvement of wet lands for many years to come; drainage companies and agricultural engineers will all have abundant work on their hands; and it is equally plain that their labor will be facilitated and made successful on all clay lands by the agency of the steam plough.

### Growth of Red Clover with Different Manures.

In the valuable paper on the culture of this valuable plant by the application of special manures, in a recent number of the *Journal of the Royal Agricultural Society of England*, by that scientific and extensive experimenter, Mr. J. B. Lawes, some very interesting and suggestive facts are stated; some of the more important of which we will state in a much abridged form.

The experiments on Mr. Lawes' farm satisfactorily show that some of the crops that are generally grown in rotation will yield a larger amount of produce year after year on the same land, on the application of certain constituents as manure. Thus, a part of the same field, in which the experiments on clover now in question were made, has grown barley for ten years in succession, and on some plots large crops have always been obtained. In like manner, in an adjoining field, wheat has been successfully grown for sixteen years consecutively. Nor is there at present anything in the results to lead to the supposition that these crops might not be so grown continuously for a century.

The results, however, of similar experiments with clover are very different. The practical conclusions derived from a careful comparison of the experiments may be thus very briefly stated:—When land is not what is called "clover sick," that is from exhaustion not

capable of producing a healthy crop at all, the produce of clover may frequently be increased by top-dressings of manure containing potash, gypsum, and super-phosphate of lime; but the high price of salts of potash, and the uncertainty of the action of manures upon the crop, render the application of artificial manures for clover a practice of doubtful economy. On land termed "clover sick," some of the ordinary manures, whether "artificial" or natural, can be much relied upon to secure a crop. So far as our present knowledge goes, the only means of ensuring a good crop of red clover is to allow some years to elapse before repeating the crop upon the same land.

In works on agriculture the failure of clover is accounted for in a great number of ways, among which the following assumed causes may be mentioned:—Exhaustion of the soil by over-cropping and non-manuring; the growth of parasitic plants, which strike their roots into the clover and exhaust its juices; destruction by insects; the injurious influence arising from the matter excreted by the roots of the former crop, or from the decay of the roots themselves; the growth of the young plant under the shade of a grain crop. Although the clover crop may be found to suffer from more than one of the above-mentioned causes, the phenomena which present themselves are nevertheless by no means satisfactorily explained; and so far as prevention is concerned, our knowledge is pretty nearly limited to that of the fact, that the only chance of growing the crop with success is to allow a certain number of years to elapse before repeating it on the same land.

Although clover is generally a more certain crop on this side of the Atlantic than in the old countries of Europe, still even here of late years it has become somewhat precarious on land that has been long under tillage in the ordinary way; and either special manures, or rest,—that is, repeating the crop at longer intervals,—must be given, in order to bring about the former state of productiveness. Much injury is often done the cultivated grasses as well as grains, by the foul state in which the former are often sown. *Clean seed*



is a matter of the utmost importance. Farmers in general are quite unaware of the extent of the mischief which they thus suffer. In a single pint of red clover as many as 1,600 seeds of plantain have been found; and in a pint of white clover have been detected by careful observation by means of the microscope, 11,200 small seeds of various kinds of weeds! It thus becomes easy to account for the dirty state into which much of our pasture as well as arable land has fallen.

### Care and Food of Live Stock.

At this inclement season of the year, the farmer's best attention should be devoted to the management of his live stock. Not only should shelter and warmth be provided, but special care must be bestowed on all matters relating to cleanliness, feeding, and ventilation. In this country, animals suffer more from want of systematic feeding and cleanliness than from cold, a low degree of which they can tolerably well endure, if unaccompanied with dampness. It is fortunate that in our severest weather, the atmosphere is generally still and dry. With buildings properly constructed, so as to prevent cold currents of air, and yet admit a sufficiency of that essential element, stock, with due attention to cleanliness and feeding, may be carried through our long and severe winters without any extraordinary difficulty, or risk of their health.

The use of straw as food to cattle forms a portion of a very valuable prize essay of Mr. Evershed, which appeared in a recent number of the *Journal of the Royal Agricultural Society of England*. The writer is of opinion that, although it is a common plan in many of the grazing districts of England, where roots are comparatively scarce, to feed store cattle on about 20lbs. of straw and 3lbs. of bean meal, yet that they do better on straw with roots *instead of meal*, even when the supply of roots did not exceed  $\frac{1}{2}$  cwt. per head, a day. Cattle wintered on straw and meal only became "hide bound," with staring coats. It is calculated that the average production of straw per acre is  $2\frac{1}{2}$  tons; that not more than four cwt. of straw enters into the composition of a ton of farm

yard manure; the remainder being, excrements 6 cwt. and rain water 10 cwt. The consumption of straw-chaff by a cart horse is put down at one ton per annum, at least; cattle at 21 cwt. per annum; and for the sheep on a farm of 400 acres, 8 tons of straw-chaff yearly. On an arable farm of 400 acres, therefore, Mr. Evershed calculates that there is required for the fodder of 50 head of large stock, whether horses or beasts, at least 50 tons; for sheep 8 tons; for storing roots, when wheat is reaped, waste from thatching, making foundation of stacks, &c., say 5 tons; total 63 tons of straw. This article of straw, when finely reduced by the chaff-cutter, is more readily eaten by animals generally.

We also find in the same number of the Society's Journal, an interesting report by Professor Voelcker, on the results of his experiments, which appear to have been conducted with great care and originality, on the feeding properties of several substances. The following results of his analysis of two varieties of Kohl-rabi, of cabbage, and of mangel wurzel, and of the repose pulp after its distillation, will be interesting to our readers:—

|                                                    | Green top. | Purple top. |
|----------------------------------------------------|------------|-------------|
| Water .....                                        | 86.020     | 89.002      |
| Oil .....                                          | .227       | .177        |
| *Soluble compounds .....                           | 2.056      | 2.006       |
| Sugar, gum and pectin....                          | 6.007      | 4.486       |
| Salts soluble in water.....                        | .970       | .919        |
| †Insoluble protein compound                        | .360       | .269        |
| Digestible fibre and insoluble pectinous compounds | 2.933      | 1.893       |
| Woody fibre (cellulose)...                         | 1.230      | 1.106       |
| Insoluble mineral matters..                        | .197       | .139        |
|                                                    | 100.000    | 100.000     |
| *Containing nitrogen .....                         | .329       | .321        |
| †Containing nitrogen.....                          | .048       | .043        |
| Total Nitrogen .....                               | .377       | .364        |
| Per centage of ash .....                           | 1.167      | 1.058       |

A comparison of the preceeding results, with the analysis of swedes, mangels, and turnips, shows that theoretically kohl-rabi is much more nutritious than white turnips, and fully equal, if not superior, to swedes and mangels.

The composition of the heart and inner

leaves of the cabbage was proved to be as follows:—

|                                    |       |
|------------------------------------|-------|
| Water .....                        | 89.42 |
| Oil .....                          | .08   |
| *Soluble protein compounds .....   | 1.19  |
| Sugar, digestible fibre, &c. ....  | 7.01  |
| Soluble mineral matter .....       | .73   |
| †Insoluble protein compounds ..... | .31   |
| Woody fibre .....                  | 1.14  |
| Insoluble mineral matter .....     | .12   |

100.00

|                            |     |
|----------------------------|-----|
| *Containing nitrogen ..... | .19 |
| †Containing nitrogen ..... | .05 |

Cabbages contain about the same proportions of water, sugar, and protein compound as are found in good swedes. It appears that cabbages and swedes, weight for weight, possess nearly the same nutritive value.

There is nearly  $3\frac{1}{2}$  per cent. more water in the pulp than in the mangel. The decomposition of one specimen of each dried at  $212^{\circ}$  was found by Dr. Voelcker to be as follows:—

|                                                                      | Mangels. | Pulp. |
|----------------------------------------------------------------------|----------|-------|
| Sugar, gum, and soluble protein compounds .....                      | 58.98    | 23.22 |
| Soluble mineral matter .....                                         | 10.79    | 6.17  |
| *Soluble albuminous compounds .....                                  | 7.62     | 6.67  |
| †Insoluble albuminous compounds .....                                | 1.14     | 8.25  |
| Cellular fibre and insoluble pectinous compounds (crude fibre) ..... | 20.57    | 49.22 |
| Insoluble mineral matters .....                                      | .90      | 5.71  |

100.00 100.00

|                            |      |      |
|----------------------------|------|------|
| *Containing nitrogen ..... | 1.22 | 1.07 |
| †Containing nitrogen ..... | .18  | 1.32 |

|                                |      |       |
|--------------------------------|------|-------|
|                                | 1.40 | 2.39  |
| Equal to protein compounds ... | 8.76 | 14.92 |

The Professor adds:—"A careful consideration of the differences just pointed out in the composition of pulp and roots will enable us to decide with no great difficulty—1st. That weight for weight, pulp similar to that analyzed by me cannot possibly have the same feeding value as good mangel-wurzels. 2nd. That such pulp, however, is a refuse material which possesses high feeding properties."

### Adulteration of Seeds.

It would appear, at first sight, an unnecessary thing to remind farmers and gardeners of one of the most important and self evident truths connected with the practice of their art, viz., the

importance of exercising the greatest care in selecting *pure and sound seed*; but observation and experience too plainly show that in numerous instances, such precautions are in a great measure practically disregarded. Hence it is that both our farm and garden crops are not only inferior both as regards quantity and quality, but the soil is filled with pernicious weeds, most difficult and expensive to eradicate.

In a recent number of the English Agricultural Society's Journal, there is a valuable paper on this subject, by the Messrs. Raynbird, of Essex, who are among the most extensive and respectable seed-growers in Britain. The following facts, chiefly taken from that article, cannot fail to interest our readers on this side of the Atlantic, where it is to be feared a great many old and impure seeds, partly, perhaps, because they are sold cheap, are extensively purchased, to the great loss and annoyance of our farmers and gardeners.

Seeds are adulterated with old seed and with dead seed, and with other seed. Thus clovers of the last year's growth are mixed with the remainders of old stocks, either dead or with vitality impaired—red clover is mixed with the cheaper article trefoil—white clover with red suckling, when that happens to be the cheaper of the two, and it is moreover sometimes colored to make it resemble alsike clover.

Turnip seeds, too, are mixed with dead and refuse samples and with rape seed, sometimes killed to save detection in the crop.

Rye grass seed is mixed with seed of the worthless *Holcus lanatus*—soft meadow grass; and the high-priced Italian rye grass is especially liable to adulteration of this kind, though its awn should make any admixture with it easy of detection. Let us here quote from Mr. Raynbird a passage indicating the general prevalence of dishonesty of this kind:—"Although with the farmer and country dealer some of the London trade get the credit of these tricks, they sometimes extend to the country; as shown by the following transaction, in which I was personally concerned. Some five or six years since, towards the end of the seed season, I bought of a well-to-do country dealer, who has a high reputation for respectability, and who has (it is said) amassed a large fortune by his dealings, some 50 or 60 quarters of what appeared to be a fine parcel of Italian rye grass, the want of the usually characteristic awn on a part of the seed being attributed to over-ripening, or some such cause. This sample was immediately resold to Mr. William Skirving, the well-known seedsman of Liverpool, one of the most straightforward and honorable men in the trade, who made a



request for immediate despatch. Accordingly, dependence being placed upon the honesty and reputation of the country merchant, the 50 or 60 quarters were forwarded on from London without the usual examination there. When the seed was inspected in Liverpool it was found to contain a large percentage of light Scotch rye grass so carelessly mixed that when shot out of the bags the seed showed a streaky appearance, giving plain evidence of the impostor's practices. Accordingly the seed was returned; but, as it was sold for delivery in London, its removal thence without examination prevented me, by the custom of the trade, from enforcing the claim to compensation; although it is very doubtful, I believe, whether the law would not have given me redress, and a sound legal decision on this point would be of great service to the trade."—It is, however, more, perhaps, from the carelessness than the dishonesty of dealers that the farmer suffers, and under this head the injury inflicted is in point of fact inflicted by himself. Seeds of crops are mixed with seeds of weeds, owing to the carelessness of the grower; and this is an injury to the buyer of greater magnitude than any which is suffered by the intentional admixture of dead or worthless seeds with a genuine sample.

Weeds are no necessary growth amidst our crops. The plant appears because the seed is in the soil; and it continues to appear, notwithstanding cultivation, because the cultivator sows its seed. In grass fields many weeds continue to arise because mown after the seeds are ripe; and in arable lands the hoe sows often a myriad in the act of destroying one. The scythe and the sickle scatter broadcast what ought never to be allowed to ripen; and the drill and hand in depositing our wheat and other grain, our turnip seed, sainfoin, clovers, grasses, &c., *sow and carefully deposit*, and harrow in as many seeds of weeds as seeds of cultivated crops. And not only does the hoe, and the scythe, and the wind, and the sowing machine, scatter weeds broadcast over our fields, but the dung cart also is full of them. So long ago as the meeting of the Agricultural Society at Southampton we remember seeing plots of grasses which had been manured with farm yard dung compared with other plots on which (broadcast) guano, nitrate of soda, &c., had been used. The artificial manures contained no seeds of weeds; but it was plain that the dung cart had been full of them. When pure seed shall be sown, and no opportunity given in any way for the return to the land of any other than the seed of our cultivated crops, then we may hope that the hoe will ultimately clear the land of weeds; but as long as the farmer sows their seeds he must expect to reap their produce.

We take the following illustration of our subject from a recent number of Morton's Farmers' Almanac:

The impurity of farm seeds, owing to the presence of weed seeds, has been fully investi-

gated by professor Buckman, of Cirencester College, who has published his results in the *Agricultural Gazette*. The following table describes the character of one series of samples of seeds, to which his attention had been drawn by a correspondent:—

| Name.                                    | Weed Seeds to the pint Imperial | Weight of 2 oz. by measure. | Remarks on Principal Weeds, &c.                                                                                |
|------------------------------------------|---------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------|
| 1. White Clover .....                    | 128,000                         | .....                       | Caryophyllæe, Polygonaceæ Composite, Myosotis, Scrophulariaceæ, &c.                                            |
| 2. Red Clover .....                      | 16,960                          | .....                       | Plantain, Myosotis, Caryophyllæe. Of these 9600 seeds were those of Plantain.                                  |
| 3. Cow-grass Clover .....                | 12,160                          | .....                       |                                                                                                                |
| 4. Rib-grass - Plantago lanceolata ..... | 1920                            | .....                       | Polygonaceæ—Dirt and stones.                                                                                   |
| 5. Italian Rye-grass .....               | 2200                            | 172 grains.                 | Ranunculus repens, Holcuslanatus, Bromis mollis, Bromus, Holcus, Triticum repens, Arrhenatherum avenaceum, &c. |
| 6. Cockfoot .....                        | 3440                            | 124 "                       | Holcus, Rye-grass, &c., very dirty.                                                                            |
| 7. Smooth-stalked Meadow Grass .....     | 19,000                          | 160 "                       | Holcus, Rye-grass, &c.                                                                                         |
| 8. Crested Dogtail Grass ..              | 6400                            | 360 "                       | Bromus mollis, &c.                                                                                             |
| 9. Meadow Foxtail Grass ..               | 19,200                          | 52 "                        | Nearly half Holcus lanatus.                                                                                    |
| 10. Meadow Frenche Grass ..              | 3200                            | 200 "                       | Holcus lanatus.                                                                                                |
| 11. Sweet-scented Vernal Grass .....     | 1600                            | 100 "                       | Caryophyllæe and small weeds.                                                                                  |

The first example in this list may well astonish our readers. *One hundred and twenty thousand weeds* to a pint of clover seed! This, allowing 12 lbs. to an acre, should give to a square yard of ground a quantity more than sufficient to crop the soil; and if we consider that clovers are at best a slow and shy growing plant, and that the weeds detected in this particular sample come to perfection so rapidly as not unfrequently to produce two crops of seed in a year, we need scarcely wonder that the land should so often be pronounced as "clover sick;" for while there is no denying the condition to which this designation has been given, yet recent observations have led to the conclusion that in cases

of well-prepared land in good condition for a clover crop, sown weeds—to say nothing of those previously in the soil from seeding on the land as the result of dirty farming—have been the cause of failure. Our limited space hinders any enlargement on this subject; but we commend the above table to the attention of our readers, as describing the most important fact in agriculture to which this little book this year refers.

The following is Mr. Raynbird's advice to buyers of seeds, in order to the detection and punishment of roguery:—

1st. To select a responsible and respectable seedsman, and not to seek goods at the lowest price and of the lowest value; if he does this, a seedsman can no doubt supply a cheap article, but can he recommend it? 2nd. To purchase seed with a warranty that a certain percentage of the seed will vegetate; the warranty to cover the value of the seed, or more, if necessary. 3d. To try a certain number of seeds, both in a hot-bed and in the open ground, and see what proportion vegetates: the first plan speedily showing the actual number of living seeds—the second what number would probably grow under open air culture. 4th. to examine seeds him with a microscope, that he may detect the percentage of weed adulterations; the microscope, carefully used, would probably detect not only this but the new or old, doctored or mixed nature of seeds—a single glass is sometimes used now, but a microscope of tolerably high power would be far more efficacious. 5th. To note that the adulteration of rye-grass by admixture, however carefully done, may be detected easily when one seed is lighter than the other; the winnowing machine will separate each according to their respective gravities. 6th. To get good genuine samples of similar seed, with a view to a comparison with that purchased both by the eye and by floating the two in water as a test of comparative gravity. 7th. Since, however simple these modes are, many persons will be too much engaged to try them, and will buy seed just before sowing and put it in the ground with merely a cursory examination; why should we not adopt the practice of taking a sample for examination by a scientific botanical examiner, that he may determine the percentage of weeds and of live seeds, just as we have chemical analysis to examine artificial manures? A few shillings thus laid out might save pounds.

To conclude, the adulteration of seeds is a practice of trade, or rather a system of fraud similar to that of falsely labelling goods for sale: as when a hundred yards of cotton thread are labelled as 200; or a tin of coffee stated to weigh 2 oz. or 3 oz. more than its true weight. But there is this difference in these latter instances, that the buyer of the cotton or the coffee suffers an immediate and direct loss, the amount of which can be at once estimated; but the loss to the buyer of doctored seeds is far greater, affecting all the expected increase of

the fruits of the earth, if not permanently tainting the soil on which they grow. In honourable trade things should be called by their proper names, and if it is necessary to have mixed and doctored seeds they should be sold as such.

Adulteration plainly owes its origin to the desire to amass wealth and, so long as the demand for cheap goods continues, I fear it will be pandered to by the unscrupulous trader. Dr. Buckman's words in the "Journal," vol. xvii., p. 376, may prove a fitting conclusion: "Pure or clean seed is ever worth paying a greater price for, as the reverse may entail trouble and expense for years. Any mechanical processes, therefore, which can be made available for cleaning seed are well worthy of patronage. A seedsman who will be careful in the preparation and collection of seed deserves the best support. In order also to assist in this matter, farmers should be particular not to allow a dirty patch to stand for seed, although it may be 'the most profitable thing they can do with it.'"

### Mean Temperature of the Year 1861.

We have been obligingly furnished with the following table, showing the mean temperature of each month of the past year, with the difference from the average, by Mr. Sergeant Walker, of the Toronto Meteorological Observatory:

| MONTH.         | MEAN TEM-<br>PERATURE. | DIFFERENCE<br>FROM THE<br>AVERAGE | REMARKS.                       |
|----------------|------------------------|-----------------------------------|--------------------------------|
| January.....   | 19.6                   | —3.67                             | Alternately<br>Warm &<br>Cold. |
| February.....  | 26.06                  | ×3.08                             |                                |
| March.....     | 26.92                  | —3.21                             |                                |
| April.....     | 42.02                  | ×1.04                             |                                |
| May.....       | 47.50                  | —3.89                             | Cold.                          |
| June.....      | 61.29                  | —0.07                             |                                |
| July.....      | 65.37                  | —1.48                             |                                |
| August.....    | 65.48                  | —0.54                             |                                |
| September..... | 59.07                  | ×1.16                             | Warm.                          |
| October.....   | 48.74                  | ×3.22                             |                                |
| November.....  | 37.14                  | ×0.45                             |                                |
| December.....  | 31.13                  | ×5.02                             |                                |
| Mean.....      | 44.21                  | ×0.09                             | Mild.                          |

### Leached Ashes as Manure.

EDITORS "AGRICULTURIST,"—Would you be good enough in your next issue to give a little information as to the value of *Leached Ashes* as a manure for general purposes. Their value *unleached* is well known, but after coming from the soapers their value must be greatly diminished. Alone, would they be sufficient for turnips, or wheat, or corn—say 20 tons per acre? or must they be combined with other composts?

Last year I applied *coal* ashes, with the cinders, over land on which a week after I planted corn, and sowed a patch of turnips. Both corn and turnips were greatly injured. The corn on which stable manure was used was green, and gave good ear, while that on the ashes was yel-



lowish and very poor. And as for the turnips, (and they were well worked,) not one grew bigger than a good sized potato. Can they not be used advantageously?

Is bone dust equally good for carrots and turnips and mangels? Kindly say where the *dust* can be had, and at what price?

Your kind attention will oblige,

Yours respectfully,

ROBT. MACAULAY.

HAMILTON, January 1862.

#### REMARKS.

The ashes of plants differ materially in their composition, not only as regards the various species, but also the same variety of plants will yield ingredients, in different proportions, according to the nature of the soil, the mode of culture, and the character of the season. The manuring power of ashes, therefore, cannot be estimated by any fixed standard. Wood ashes always contain a considerable amount of carbonate of potash, lime, &c., and are consequently very beneficial to such plants as require large quantities of these alkalies, such as Indian corn, turnips, beets, and potatoes. *Leached ashes* have lost much of the principal alkaline salts, and have been deprived of the greatest part of their most important soluble ingredients; still they must not be regarded as an unimportant fertilizer, as the lime and other mineral matter which they contain is always more or less beneficial to the soil. Unless the land is well worked and contains sufficient *organic* matter, we should not consider ashes, whether leached or unleached, as *alone* adequate to the production of a good crop of wheat, turnips, or corn.

Leached ashes we should recommend, as a general rule, to be used as a compost, or with other materials abounding in the organic elements; that is, containing vegetable and animal matter.

Coal ashes rank much lower in the scale of fertilizers than those derived from wood. Their chief value as a manure consists in the quantity of earthy salts they contain. Especially sulphate of lime, and more or less of the phosphate of magnesia. After all, their mechanical action on certain soils is, perhaps, more beneficial than their chemical, particularly on very heavy, adhesive soils, destitute of lime. In such soils coarse coal-ashes, when applied in considerable quantity, and thoroughly incorporated with the

soil, by deep ploughing or digging, tend very much to lighten it, by permanently opening up its pores, and thereby affording free admission of air, heat, and moisture. On very light soils, which are naturally too loose and porous, the action of coal ashes may prove positively injurious, by giving greater intensity to these qualities. This may have been the case with our correspondent, who does not state whether his soil is stiff or light, nor its condition in relation to organic matter. We should certainly not recommend the application of coal ashes to light, hungry soils, except, perhaps, as a top dressing for grass or clover.

Bone dust may be relied on as an excellent manure for turnips, carrots, mangels, &c., and it possesses great value as a dressing for most of the cereal crops, particularly old pastures. The most reliable and economical way, perhaps, of using it, is in a compost with other things,—such as farm-yard dung, ashes, rotten leaves, scouring of ditches, &c. It would be well if a bone mill was erected in the vicinity of all our principal towns and cities, as the quantity of manuring matter lost from this neglected source alone is beyond all calculation. Mr. Lamb, of Toronto, has had a bone-mill in operation for several years, and many of his customers, we happen to know, have been well satisfied with the result of their trials. Mr. Lamb's prices are 50 cents per bushel, crushed coarsely; and 60 cents for half inch and dust. He allows 15 per cent discount on all orders of not less than \$100. We will shortly take up the consideration of the matters involved in our correspondent's communication more in detail.

#### The Agriculturist.—Correspondents Wanted.

EDITOR OF THE CANADIAN AGRICULTURIST.  
—Dear Sir,—I have just received the last number of the *Canadian Agriculturist* for 1861, and I must say that I am highly gratified with its improvement, especially for the last year, therefore I do not hesitate to say that it stands not No. 2 to any of the American Agricultural papers that we get from our neighbours. But there is one feature lacking, namely, a greater amount of correspondence, which I frequently hear you complain of. If this could be obtained it would add much to the popularity of your valuable paper. I think the cause of this must be the high postage. Men do not like to give

information and then have to pay for it. But I will come to a conclusion, with the remark that your paper is like a winter apple, ripening better and better.

R. B. WERDEN.

Picton, Prince Edward, Jan. 20, 1862.

### Patents of Invention.

We extract from the official Gazette the following list of patents issued for agricultural implements and machines:

BUREAU OF AGRICULTURE AND STATISTICS,  
Quebec, 15th Jan., 1862.

His Excellency the Governor General has been pleased to grant Letters Patent of Invention for a period of Fourteen Years, from the dates thereof, to the following persons, viz:—

Heman Hazleton, of the Township of Townsend, in the County of Norfolk, Carpenter, "An Improved Self Propelling Gate"—(dated 21st May, 1861.)

Silas Welte, of the village of Princeton, in the County of Oxford, Cabinet Maker, "An improved Churn, termed the 'Blenheim Churn.'"—(Dated 22nd May, 1861.)

Robert Kerr, of the township and county of Waterloo, Yeoman, "A Grain and Seed Broadcast Sower."—(Dated 24th May, 1861.)

George A. Carman, or the village of Morrisburgh, in the county of Dundas, Carriage Maker, "A Vegetable Root Cutter."—(Dated 28th May, 1861.)

Michael Clair, of the township of Sophiasburg, in the county of Prince Edward, "The Excelsior Washer."—(Dated 4th June, 1861.)

James McKelvey, of the town of St. Catharines, in the County of Lincoln, Tinsmith, "A Refrigerator termed the 'Prince of Wales' Cupboard Refrigerator."—(Dated 25th June, 1861.)

Elias Vanderwater, of the township of Sidney, in the county of Hastings, Machinist, "An improved Reaping and Mowing Machine."—(Dated 17th July, 1861.)

Henry Fryatt, of Aurora, in the County of York, Carpenter, "Rotary Tooth for Harrows." (Dated 17th July, 1861.)

George Deans, of the town of Port Dover, in the county of Norfolk, Mechanic, "A Challenge Washing Machine."—(Dated 18th July, 1861.)

Almas A. Knowlton, of the township of Brome, in the county of Brome, "A Washing Machine."—(Dated 18th July, 1861.)

John Pike, of Prescott, in the County of Grenville, as assignee of John G. Frazer, of the aforesaid place, Barber, "An improved Churn."—(Dated 30th July, 1861.)

Charles R. Parkes, of the City of Toronto, in the County of York, Turner, "An improved Churn."—(Dated 30th July, 1861.)

Peter McEwen, of Russell, in the county of Russell, Farmer, "An improved Plow."—(Dated 30th July, 1861.)

Abiel O'Dell, of the Town of Bowmanville, in the county of Durham, Machinist and Builder, "A Self-regulating Spiral Spring Mangle and Washing Machine."—(Dated 3rd August, 1861.)

John Powers, of the town of Stratford, in the county of Perth, Builder, "The Victoria Washing Machine."—Dated 3rd August, 1861.)

Richard H. Oates, of the city of Toronto, in the county of York, Manufacturer, "A Self-revolving Wind-Mill House with circular foundations."—(Dated 9th August, 1861.)

David Elm Norton, of the town of Bowmanville, in the county of Durham, Machinist, "An improved Churn, termed 'Norton's Horizontal Screw Dash Churn.'"—(Dated 10th August, 1861.)

Robert Webber, of the township of East Zorra, in the county of Oxford, Yeoman, "Webber's Scarifier or Field Cultivator."—(Dated 20th September, 1861.)

William and Thomas Walker, both of the township of Chinguacousy, in the county of Peel, Carpenters, "The Ocean Wave Washing Machine."—(Dated 29th Nov., 1861.)

C. S. Shannon, of the city of Hamilton, "An improved Driving Rein."—(Dated 29th Nov., 1861.)

Henry Dodd, of the township of Goderich, in the county of Huron, "Improved Sieves or Screens for Fanning Mills."—(Dated 29th November, 1861.)

Volney O'Brien, of the town of Guelph, in the county of Wellington, "The Excelsior Churn."—Dated 29th Nov., 1861.)

James G. Thompson, of the town of Peterborough, Gentleman, "An Automatic Gate."—(Dated 29th Nov., 1861.)

Asa Jarvis Foote, of the village of Tilsonburg, in the county of Oxford, "A new and useful Washing and Scouring Machine."—(Dated 29th Nov., 1861.)

Hugh McLaren, of Lowville, in the county of Halton, "A combined Seed Drill and Cultivator."—(Dated 29th Nov., 1861.)

N. H. Nutting, of the township of Marysburg, in the county of Prince Edward, "The Ontario Washing Machine."—(Dated 29th Nov., 1861.)

William Depew, of Paris, county of Brant, Tinsmith, "A Balance Gate."—(Dated 29th Nov., 1861.)

### On Feeding Stock.

The following lecture on Feeding Stock was delivered by Dr. Anderson, chemist to the Highland Agricultural Society of Scotland, at its annual meeting in Edinburgh, December 18th,



1861. It will be found interesting and useful to our readers generally. Eds.]

In an address given at the Edinburgh show, in the year 1859, I took up the subject of the feeding of stock as a branch of farm management, and discussed the general principles on which its prosecution depends, referring more especially to the nature of the food and its use in such a manner and in such quantities as are necessary to secure a proper proportion of the great classes of nutritive compounds required to maintain the vital functions in a state of healthy action, and the particular conditions under which the constant wastes of the tissues may be reduced within the narrowest possible limits, and the quantity of food required to supply the place of the effete matters thus diminished to the greatest extent. These matters, in fact, include the broad principles which must be kept in view in the feeding of all animals, and practice has arrived at conclusions in harmony with them, by studying, in the first instance, the natural instincts of the animals, and observing the kinds of food they prefer, and then by mixing the different substances in different proportions, and otherwise varying the mode in which they are supplied to the animal. It has thus come to be well known that certain foods and mixtures produce a better effect than others, some kinds fattening quickly and giving the animal those qualities which the butcher seeks, and others producing a much less favourable result. Looking at the subject in a practical point of view, it becomes, of course, most important to prosecute it into detail, and to ascertain the most economical method of arriving at the required result, and by a systematic series of trials it is possible to obtain an accurate knowledge of the kinds and quantities of food capable of replacing those in common use, and to make mixtures which fulfil the same end with greater economy. A great part of this knowledge has been attained by experience—that is, by a succession of trials extending over a very long period of time, and many of which have, in one sense, proved failures, inasmuch as they showed that particular mixtures were uneconomical, and a source of loss to those who used them, although in another sense, they were not failures, because they showed what ought to be avoided. If it were possible to go back over the whole range of trials by which our practical knowledge of the best proportions and kinds of food has been acquired, it would, no doubt, be found that, as in most instances, experience has been bought at a very high price. It is only after often-repeated observations that it can arrive at incontestible conclusions, and herein it is that science differs from experience. The results in both are obtained by observation, but science has systematised observation, and has coupled with it the explanation of the facts observed. It starts from the knowledge acquired by experience, seeks to discover the *rationale* of every fact, and

endeavours to generalize and classify them.—Thus, if it has discovered, for example, that a particular food known to give unfavourable results is deficient in some particular element, it then proceeds to try whether the addition of that substance will increase its nutritive effects; and if this proves to be the case, it is justified in inferring that every other food in which that element is wanting will also prove disadvantageous in practice. The tendency of science, therefore, is to diminish the number of trials which end in loss, and thus to acquire practical knowledge with greater rapidity and economy. It is obvious, however, that science cannot in all, or even in many instances, predicate with absolute certainty the exact extent to which particular foods are likely to be advantageous in practice; but this is owing in a great measure to our still imperfect knowledge of the complicated mechanism of the animal frame; and no one who knows either this or the various disturbing causes which interfere with the results when vital processes come into play would for a moment venture to indulge in dogmatic assertions, but would rather look upon science as fitted to direct experiment and supply a class of facts which may form the groundwork of further practical observations.

The position which science is capable of taking may be best illustrated by a particular example, and for this purpose we may select the facts connected with the use of rape cake as a feeding stuff. Chemistry has shown that, so far as the proportion of nutritive matters contained in that substance is concerned, it is completely on a par with linseed cake, which sells at double the price, but it has also established the fact that it contains a small proportion of a peculiar bitter principle of a resinous character associated with its oil. Now, it is well known that some bitters are not unpalatable to cattle, while others are very offensive; but it is not possible by analysis alone to foretell whether any such substance belongs to the one or the other category, that being a matter which can only be decided by observing the effect it produces on the animal itself. At this point, therefore, the function of science ends, and that of practical observation begins; and it has been found in practice that—owing, no doubt, to the presence of this substance—rape cake cannot be given with the same freedom as linseed cake, because, when consumed in large quantity, its disagreeable taste affects the animal, although when used in smaller proportion and mixed with palatable substances it proves highly nutritious. These facts having been determined, a further progress may be made, and science may proceed to inquire whether it lies within its resources to devise a process by which the objectionable constituent may be removed and the substance thus placed on a level, with the most favored food, while practice may study the best method of concealing its taste or otherwise palliating its bad effects. When the study of the principles of feeding is

prosecuted into detail, many subjects of great interest and importance offer themselves for consideration, and of these not the least worthy of notice is the best method of making the food consumed fully available to the animal. It has been clearly established that only a very small proportion of the nutritive matters of the food is stored up within the body in the form of flesh and fat, and that even under the most favorable circumstances by far the larger proportion is practically wasted, or at least reduced to the less valuable form of manure. It is known also that the quantity stored differs greatly in different animals; thus, the pig makes a much better use of its food than the ox, for it will increase in weight nearly twice as much with the same consumption of food. The same is true, though to a more limited extent, with regard to individuals of the same species, and every one knows that some cattle fatten more quickly than others. These differences are, no doubt, often due to constitutional peculiarities which cannot be overcome in practice; but it cannot be questioned that it is a matter of the greatest possible moment to determine the circumstances under which the waste can be reduced to a minimum, and the animal be made to assimilate the largest possible proportion of the food which enters its stomach. It is very obvious that the complete solution of this problem involves many nice physiological questions, and in the present state of our knowledge is scarcely possible; but there are individual departments of the subject which may be considered, and to one of these I propose directing your attention on the present occasion.

The particular question I intend to discuss is how far the nutritive value of a food may be increased by adding to it certain accessory substances which are not themselves *foods*, in the proper sense of the term, but which, either by maintaining the general functions in a state of health, or by promoting digestion, facilitate the assimilation of the true food. My attention has recently been directed to the subject in the course of some experiments, to which reference will afterwards be made, but which I shall here discuss only in a general point of view. Substances added to the food in this way are commonly known by the name of "condiments," and are understood to operate by promoting the healthy exercise of the digestive organs. The mode in which they do this, however, is not well defined, and cannot in all cases be identical. We ourselves use a vast variety of those substances, but we do so without any definite object, and most of them have probably no other effect but that of pleasing the palate, and are, therefore, very far from acting favorably, but rather induce the ingestion of a larger quantity of food than the stomach can properly dispose of, and, consequently, check, instead of promote the progress of digestion. On the other hand, if we are to argue from our natural instincts and the universality of their use, there are substances which must be beneficial. Experience has led us to the use of

certain mixtures of food, which are often considered to be mere manifestations of popular fancy, but which are really founded on natural laws, thus, for example, we eat beans and bacon, and thus conjoin a very fat feed with the most highly nitrogenous vegetable. In the same way, the Irish laborer who consumes a large quantity of the starchy potato uses along with it a great deal of milk, so as to supply the nitrogenous and fatty substances the system requires. It is reasonable, therefore to assume that the use of condiments is dictated by the necessity for them. If, then, the subject is important in regard to human beings, it is still more so in relation to the feeding of cattle, which, in their artificial state, cannot select for themselves, but must take what the feeder supplies.

The most important of all condiments to animals is unquestionably salt, and if we are to assume that their natural instincts lead them to take what is beneficial, we can have no doubt as to its utility. The desire for it is shown by the avidity with which cattle consume it when lumps of it are placed in their feeding troughs, and that this is not the effect of the artificial state in which they are kept is proved by the fact that any spot where it exists is sure to become the resort of wild cattle. Such spots are not uncommon in the back woods of America, where they are known by the name of "salt licks," and the ground around them is constantly covered with the footprints of innumerable herds of wild cattle. So familiar is the desire of cattle for salt that in our colonies it is well known that the most effectual method of preventing them from straying is to place abundance of salt at their disposal in the neighborhood of the stations at which they are kept. Beyond all question, then, salt must be in some way advantageous to animals. Let us see whether it is possible to find any reason for this. If the different parts of the animal body be examined, the quantity of salt contained in it is found to be far from inconsiderable. Thus—

|                            |                |
|----------------------------|----------------|
| Human blood contains ..... | 0.42 per cent. |
| Milk .....                 | 0.02 "         |
| Horses' blood .....        | 0.51 "         |
| " chyle .....              | 0.53 "         |
| " urine .....              | 0.29 "         |
| Ox urine .....             | 0.01 "         |
| Pig urine .....            | 0.52 "         |
| She p urine .....          | 0.63 "         |

It is clear, therefore, that a considerable quantity of salt is indispensable for maintaining the supply required by the system. Thus, a horse excretes daily about 20lbs. of urine, containing nearly 400 grs. of salt. If, now, we look to the food as the source of this supply, we are struck by the small proportion of common salt which many of them contain. This quantity is exceedingly variable, and depends to no small extent on the nature of the soil on which the crop was raised, proximity to the sea, &c.; but the following tables give in grains the average quantity



contained in 100 lbs., of the more important kinds of cattle food:—

|                             | Grains. |
|-----------------------------|---------|
| Meadow hay.....             | 2940    |
| Clover hay.....             | 2380    |
| Oat straw.....              | 840     |
| Turnips.....                | 770     |
| Red clover (fresh).....     | 630     |
| Beans.....                  | 560     |
| Peas.....                   | 315     |
| Oats.....                   | 210     |
| Potatoes.....               | 158     |
| Rye straw.....              | 79      |
| Barley and wheat straw..... | traces. |
| Barley and wheat grain..... | traces. |

It is at once obvious from the examination of this table, that in only a small number of the common kinds of food is there a considerable quantity of salt, and many of the most important substances are altogether devoid of it. It is particularly worthy of notice also that hay, which may be described as the natural food of cattle, contains it in abundance, and hence, when feeding on it, the animals may obtain all that is absolutely necessary for their health, but when they are placed upon some of the mixtures of food now in common use—such, for example, as turnips and straw—the quantity may be too small for their requirements. If to these considerations we add the necessity for salt to supply the hydrochloric acid which is found in the gastric juice, and the other uses which it fulfils in the system, we can entertain but little doubts as to the importance of an adequate supply of it for maintaining in a healthy state the functions of the animal, while it is also manifest that the quantity required for this purpose is mainly dependant on the nature of the food. Proceeding further to inquire into the influence which salt exerts in causing the animal to exhaust more completely the food supplied to it, and to store up a larger quantity, the results obtained by different experiments are very conflicting. The subject has been examined very carefully by Boussingault. He took six young cattle, which he divided into lots of three each, so as to secure as perfect uniformity as possible, and to the one he gave no salt, to the other he gave it in the proportion of 525 grains per head daily. After some time both lots were weighed, when it was found that the lot which had got salt had gained 10.5 lbs. for every 100 lbs. of initial live weight, while those which did not get salt had gained 11 lbs. In this respect the animals were restricted to a fixed quantity of food; but another was made, in which they were daily supplied with more than they could consume, and the residual quantity weighed. In this case it was found that the animals which got salt took 38.4 lbs. of food daily; those which got none, 35.9.; or for every 100 lbs. of live weight, the first took 3.2 lbs., the second 3.1 lbs., or rather less. 100 lbs. of food consumed with salt gave an increase of 6.8 lbs. of live weight; and without salt, of 7.2 lbs.

Little difference is, therefore observable between the results of the two cases; but, such as it is, it is unfavorable to salt, a somewhat larger quantity of food being necessary to produce a given increase with salt than without it. Boussingault himself remarks that the difference was so trifling that it might be disregarded; but he says also that there was a marked difference in the general appearance of the animals. Those which got salt had a lively appearance, their eyes bright, and their skin smooth, soft, and shining; while those which got no salt were dull and inactive, and their coats rough and staring; and this difference was so great that it could not escape the observation of the most cursory observer, and there could be no doubt that the former would have brought a higher price in the market. A series of experiments made by a German observer (Farthmann) on sheep lead to an opposite conclusion. He took thirty sheep and divided them into three lots. They all got daily 1 lb. hay, 3 lb. straw, and 3 lb. potatoes; and during the latter part of the experiment,  $1\frac{1}{4}$  lb. of beans were added. One lot got no salt, but the other two were supplied with it in different quantities. The result is shown in this table:—

|                                        | Average gain in weight<br>per sheep. |
|----------------------------------------|--------------------------------------|
| No salt, .....                         | 13.1 lb.                             |
| $\frac{1}{4}$ ounce of salt daily..... | 16.9 "                               |
| $\frac{1}{2}$ " " ".....               | 17.7 "                               |

Here the difference is marked, but the effect appears to be very irregular, for some of the sheep which got no salt had actually lost weight to the extent of 1 or 2 lb. Some experiments of Sprengel's also tend to show that salt promotes the production of wool: for of two lots of sheep which got 3 lb. of potatoes and  $4\frac{1}{2}$  lb. to 5 lb. of rye straw daily, those which got salt yielded 1 lb.  $11\frac{1}{2}$  oz. of wool more than the others. It is worthy of notice that in both these experiments the food contained a very small quantity of salt, amounting, in Farthmann's experiment, to about 41 grains, and in Sprengel's to 8½ grains daily, quantities which are probably insufficient to maintain the functions in a state of health.

An interesting series of experiments has recently been made by Lehmanu on the quantity of salt consumed by draught horses. The animals on which he experimented were doing their daily work, and fed on the mixture of food, which, by actual analysis, were found to contain daily 290.8 grains of salt. Into the manger of each horse was placed a lump of rock-salt weighing 8 or 10 lb., which it was allowed to lick *ad libitum*. The quantity of salt consumed during the first three days was very large, and amounted in the case of one horse to nearly 10 oz. per day: but it rapidly fell, and at the end of six weeks the consumption did not exceed 200 grains per head, and the animal which began by taking so large a quantity of its own

accord entirely abandoned its use. The salt consumed by different horses varied very much, but was always largest in the case of old animals, so much so, that Lehmann remarks that the quantity eaten might almost serve to give an approximate estimate of the age of the animal. It was observed also that when the horses were worked hard, the quantity of salt used invariably diminished. The following table gives his results on this point:—

|                    | Average daily consumption. |            |
|--------------------|----------------------------|------------|
|                    | Light work.                | Hard work. |
| Young horses ..... | 199 grs.                   | 132 grs.   |
| Old horses .....   | 305 "                      | 166 "      |

If we add to these numbers the quantity of salt contained in the food, we may draw the conclusion, that according to the age and work, the total amount of salt required for maintaining the functions of a horse in a state of health varies from 400 to 600 grains daily, and it may be reasonably inferred that if the food contains this quantity, the addition of salt may generally be dispensed with.

*(To be continued in next number.)*

## Agricultural Intelligence.

### Sorghum Sugar.

The Executive Committee of the State Agricultural Society of Illinois, is in session at Springfield. The correspondent of the Chicago *Times* writes that the greatest enthusiasm seems to prevail all over the state in regard to the Sorghum question. There are many growers there, all of whom have met with marked success in its culture the past season, and who will embark more largely in the enterprise another year. The samples of both sugar and syrup there shown would convince the most skeptical of the feasibility of its becoming one of the fixed staples of Illinois.

Among the more prominent of these exhibitors of sugar, I may mention Mr. J. H. Smith, of Quincy, Ill., who presents a sample of a lot of about *one ton*, the largest amount, I am sure, ever made by one man from northern cane. It should be stated that this was made from the African cane and not from the Chinese. Mr. Smith considers this much the best cane for the production of sugar. He states that about seven tenths of the syrup runs to sugar, and that he can make the sugar at five cents per pound and molasses at twenty-five cents per gallon, and realize more profit from an acre of cane than he can from an acre of corn.

A fine (much lighter color and drier) sample of sugar is present from Blymers, Bates & Day, Mansfield, Ohio, I do not know how large a quantity they have produced.

Much interest also attaches to the fine samples

of refined syrup from the refinery of Mr. Corbett, of the *Prairie Farmer*. Everybody is delighted with it, none placing it, for flavor and sweetness, below the golden syrup of commerce. The whole question will receive the attention it deserves at the hands of the Executive Board. I have heard men, prominent in agricultural matters, state to day that every doubt they have heretofore entertained in regard to the profitable production of both sugar and syrup upon our prairies is entirely dispelled by the samples now on exhibition here and the statements accompanying them.

### Advantages of Crushing Oats.

The London Omnibus Company have lately made a report on feeding horses, which discloses some interesting information, not only to farmers, but to every owner of a horse. As a great number of horses are now used in the army for cavalry, artillery and draft purposes, the facts stated are of great value at the present time. The London Company uses no less than 6,000 horses; 3,000 of this number had for their feed bruised oats, and cut hay and straw, and the other 3,000, got whole oats and hay. The allowance accorded the first was, bruised oats, 16lbs.; cut hay, 7½lbs.; cut straw 2½lbs. The allowance accorded to the second was, unbruised oats 18lbs., uncut hay 13lbs. The bruised oats, cut hay and cut straw amounted to 26lbs.; the unbruised oats, etc. to 32lbs. The horse which had bruised oats, with cut hay and straw, and consumed 26lbs. per day, could do the same work, as well, and was kept in as good condition, as the horse which received 32lbs. per day. Here was a saving of 6lbs per day on the feeding of each horse receiving bruised oats, cut hay and straw. The advantage of bruised oats and cut hay over unbruised oats and uncut hay is estimated at 5c. per day on each horse, amounting to upwards of \$300 per day for the company's 6,000 horses.

IMPORTATIONS OF ANIMALS FOR STOCK.—The following resolutions have been adopted by the Board of Agriculture of Lower Canada:—Resolved that, in the opinion of this Board, agriculture would derive great advantages from the importation for many years to come of improved stock of cattle. That, in order to procure the best results, as the most prompt and most general, this Board recommends to all the Agricultural Societies of Lower Canada to appropriate for the period at least of three years an annual sum for the importation of animals of good stock. This Board, in order to facilitate these importations, and to diminish the expense thereof, engages itself to purchase these animals and deliver them to the different societies without other charges than those of purchase and carriage.



## EFFECT OF COLD ON FATTENING ANIMALS.

Dr. Playfair, in the Journal of the Royal Agricultural Society, in speaking of the necessity of warmth to fatten an animal readily, says that to keep up the animal heat, the oxygen of the air unites with that portion of blood which goes to form fat and tissue, and converts it into carbonic acid, water, and ammonia. Where all the vitality of the animal is used to manufacture heat, there is no power left to increase the fat. If we would fatten animals in winter we must give them a summer temperature, by warming the shed and stable they occupy. The air that they breath should be as pure as possible.

---

## Horticultural.

For the "Agriculturist."

### Dwarf Apple Trees.

On seeing a few remarks in the April number of the *Agriculturist*, made by Mr. Atkins, I would say to him that I believe from his experience, together with mine, that the representations made by the nursery-men in their catalogues and books, that the dwarf apple will bear when it is a small bush, or like the dwarf pear, is only a humbug, and done for the purpose of selling their trees; for, like Mr. Atkins, I have fine model trees eight or ten feet high, and the tops over ten feet in circumference, with limbs branching out from the ground, that have never borne an apple yet. These trees were purchased from the most responsible nurserymen in Rochester, and recommended to bear the second or third year after planting, and are now eight or ten years old.

Mr. Atkins says, if he wanted to make more dwarf trees he would graft them to Keswick Codlin, Hawthorn Dean, and Duchess of Oldenburgh. These trees are early bearers, but they grow as large as any tree, and bear on young standard trees as well as on the Paradise stock. I have late bearing kinds, such as the Northern Spy and St. Lawrence on the Paradise stock, in order to throw them into early bearing, but without effect. I have likewise visited the Rochester nurseries, and found their dwarf apple trees just like my own, and none in bearing except the early bearing kinds as above mentioned. But I am satisfied they are a better stock to graft on than the common standard, as they are more hardy and more fibrous, not forming such huge prongs, running deep in the cold and wet ground. Their branching from the ground is also a self protection to the tree, and will be the cause of it being more hardy; for no fruit tree in this country should be trimmed up and distorted, leaving a long trunk to the merciless extremes of heat and cold of our extreme climate, which will disarrange the sap vessels and cause the tree to become diseased and short-lived.

I now wish to ask for more information respecting the dwarf apple trees, to show if the above statement is not true, that others may not be deceived as to the nature of the trees, as we have been. Any information respecting the nature and habits of the dwarf apple tree, or what treatment will cause them to bear when young and small, will be thankfully received.

R. B. WERDEN.

Picton, Prince Edward County, Jan. 1862.

---

## Cultivation of Plums.

The following observations on Plum culture, written by J. M. Barret, of Canterbury, N. Y., and published in a recent number of the *Horticulturist*, will be acceptable to fruit growers generally.]

So much has been said and written of late upon the Grape question, that I begin to fear that we may forget that other fruits can be successfully raised. I therefore propose to give you my experience in raising Plums, in which I have made a profitable experiment, willing that my fellow readers of the *Horticulturist* may go and do likewise, if they believe the Yankee maxim, that some things may be done as well as others, and that one man can do what another has done *if he tries*.

In 1856, I set out with care what remained of 700 or 800 Plum trees, which had been struck out by contract two years before, and up to that time had refused to thrive. This transplanting revived them, and from that period I date the beginning of my experiment, which, including the present season, makes six years that they have been under treatment. The ground between the Plum trees has been regularly plowed and cultivated for the Raspberry crop, the product of which has paid all expenses, including \$50 per year ground-rent, for two acres and a quarter, and a profit besides. In 1859, I spread under each tree half a peck of common salt.

The black knot upon these Plum trees has appeared regularly every year, and has been cut out clean to the healthy wood in the month of June, say within a fortnight after its first appearance, and while the excrescence was still soft. It is then easily removed without injury to the tree, the wound generally healing over the same season. For the last three years this disease has decreased yearly. The past season I removed the whole from 640 trees in less than half a day. In 1859, these trees began to bear fruit, yielding twenty bushels, which was sold for fifty-five dollars, after paying expenses. In 1860, the crop was nine bushels and one peck, which brought

three dollars a bushel. In 1861, I gathered and marketed seventy-two bushels, for which I received five dollars and twenty cents a bushel, after paying expenses. The total receipts for the three years amount to four hundred and forty-eight dollars and seventy-five cents, after paying all expenses, and amounts to about three times the original outlay, including cost of trees, labour of setting, and transplanting. I know of no business which pays a better profit upon the investment. Only about one-half of my trees have yet borne fruit. Many of them produced from six to twenty Plums the past season. Of course, the production may be expected to increase for many years.

The variety cultivated by me is the free-stone frost Plum, which is the most prolific. The cling-stone is much the finest variety, holds good on the tree two or three weeks later, and brings a higher price in market.

The secret of my success may be summed up as follows:

1. By selecting varieties that are but little troubled by curculio, and that are marked without damage to the fruit; these, being used for preserves, are gathered before they become soft and mellow enough to eat; consequently, they are not injured by transportation to market, and are sure to bring a good price.

2. By careful planting in ground previously prepared and mellowed, and kept so by yearly working.

3. By use of salt as manure.

4. By an unsparing use of the knife upon the black knot in the month of June of each year, instead of waiting until fall or the next spring, or perhaps neglecting it altogether.

In former years the Plum crop of this country was a source of profit to almost every farmer, but the curculio has attacked and destroyed the finer varieties of fruit, and the black knot made such havoc among the blue Plum trees as to discourage its culture. May we not hope to see this fruit again generally cultivated for market purposes.

### Fruits, Flowers and Seeds of the West.

Nebraska is not entirely void of those little comforts that render it a home to us. Many wild fruits are to be found in abundance.—The plum, grape, gooseberry, strawberry and raspberry grow spontaneously all along our little streams and on the borders of woodlands. Gooseberries of an enormous size and fine flavor, that do not mildew and are hardy, give us their yearly crop of wholesome fruits. There are plums growing in some portions of the Territory that are *curculio* proof, and are large, fine and delicious.

But the "Flora" of the Western prairies

and plains is the admiration of all that behold them. There are a great many flowers growing wild of greater beauty and attraction than hundreds now in the flower gardens of the East, that have cost them vast amounts to get them there, while these prairie beauties are left for us to enjoy. They are left because they are not known to eastern botanists and gardeners.

We have a friend who, we understand, has been engaged the past season in collecting many kinds of shrub, flower and creeper seeds of Nebraska, Kansas, Utah, Minnesota, for a nurseryman of Utica, New York, who will be the first to introduce them to the cultivator and amateurs of the East. When once introduced, the catalogues of eastern seed dealers will have more than one new novelty that it did not possess heretofore.—*Nebraska Farmer*.

## The Dairy.

### Dairy Management.

[It is well known that the breed, and particularly the feeding of cows, have a great influence on the amount and character of dairy products, to which we may more fully advert hereafter. In the meanwhile we give our readers some excellent information on the Dairy Management, from the *Irish Agricultural Gazette* of January 4th.—EDS.]

#### BUTTER.

The first essential, in either case, is a proper dairy or milk-house; and when we consider the abominable manner in which milk is frequently kept in dwelling houses, even in sleeping apartments, in barns, where there is no protection against dust from the thatched roof and cob-webbed walls, we cannot feel surprised that there is so much good milk annually wasted in making atrociously bad butter. The milk-house should be sufficiently roomy, and fitted up so that it can be easily kept clean, and perfectly dry. For this purpose, polished stone is the best material; and the immense quantities of marble which are found in many parts of Ireland could be turned to great advantage in this way, whilst, at the same time, shelving of that nature would not be too expensive. Caithness pavement, being hard, dry, and susceptible of a high degree of polish, which is given to it before the stones are shipped, forms also very superior pavement and shelving, and is obtainable at moderate cost. Ventilation is likewise a necessary point in a dairy, and it must be so arranged that the milk-room shall be cool in summer, and yet kept at a sufficiently high temperature during winter, which should never be below 50 degrees F. The



average temperature of Mr. Horsefall's dairy is 42 degrees to 56 degrees; and he is now recognized as a standard authority on many points of dairy management.

Earthenware dishes are much better adapted than wooden ones for holding milk, because the latter require much more labour in keeping them clean, and some dairymaids are apt to be negligent on this point. Cleanliness—extreme cleanliness, in fact—is all-important in dairy management; for the least mustiness in milk-vessels will taint the milk, and injure the butter. The churns must be thoroughly scalded after each churning, and kept clean, sweet, and dry.

Butter is made either solely from cream or from the whole milk; that is, the cream is not separated from the milk, in the latter as in the former case, but both are kept and churned together. There is a difference of opinion as to which mode produces most butter. We would remind those who are not accustomed to the latter method that they must not attempt to churn the *whole milk* while it remains sweet, otherwise their labour will be lost, for it will yield no butter; the whole milk must be kept until it has become sour, when if all other points are equally attended to, as good butter will be produced as from cream alone.

Supposing the cows to be all milked—and this must be thoroughly done, for the last milk which can be drawn from the udder is the richest—then the milk is poured through a milk sieve into the dishes, so as not to be more than two inches in depth; at the same time, 4 to 6 inches is more common. Cream will not rise when there is a considerable depth of milk placed in the dish, and some people do not allow it to exceed one inch. It also rises sooner in warm weather than in cold, and for this reason it must be skimmed sooner when the weather is warmer than usual. In ordinary cases, the cream should be skimmed about 20 to 24 hours after the milk has been put into the dish; in warm weather taking it off somewhat sooner, and allowing it to remain a little longer in cold weather. As the cream is skimmed, it is put into an earthenware jar, the top of which is covered with a piece of muslin, in order to prevent flies or dust getting into the cream, whilst it admits air. As additions of cream are made to that in the jar, the whole should be thoroughly stirred and intermixed together, and the contents should not be allowed to remain longer than three or four days without being churned.

When the whole milk is churned, it is strained, as milked, into milk dishes or coolers; but a greater quantity is put into each dish than is done when the cream is to be taken off. In the north of Ireland, where churning the whole milk is a prevalent practice, the milk is strained into a jar or "crock," successive milkings being added until the jar is full, but avoiding putting in new milk just before churning; that is, suppose the churning takes place in the course of

the forenoon, the morning's milk is not added to the contents of the crock which are to be churned, but put into a fresh crock, and becomes the beginning of another gathering. This system, however, is not so good as keeping each milking by itself, so that the warm and cold milk is not mixed together. The frequency of the churning will partly depend on the weather, but the whole milk ought not to be allowed to remain longer than three days in ordinary cases, or, perhaps, four without being churned; and, in warm weather, it may be churned in two days from the time the first of it was taken from the cows.

In large and even moderate dairies the churns are driven by power, which is preferable to manual labour. Hot water is often added to milk or cream, to bring it up to the proper temperature for churning—say 52 or 53 degrees; but this is not a good practice, and where an increase in the temperature is necessary, it is better to acquire it by putting the churn containing the milk or cream into a tub filled with a sufficient quantity of water to bring the contents to a proper state. During the process of churning, the temperature will rise to 56 or 58 degrees; but it is requisite that attention be paid, so that it may not rise much higher than that point, otherwise the butter will be injured. When whole milk is churned, it will stand, however, a higher temperature than cream. Rapid churning is not desirable, and over churning is equally bad; but the best medium will be found when it takes an hour and a quarter of steady churning in ordinary weather, to produce butter.

There is a difference of opinion as to the mode of handling butter after it is taken from the churn. Some put it into a small, flat tub, and wash the buttermilk out of it by kneading it among clear, cold spring water, the milky water being occasionally poured off, and fresh supplies added, until it ceases to become tinged with milk; others knead and beat it in a clean cloth, which absorbs the buttermilk, and is frequently wrung dry. Until the buttermilk is entirely taken away; whilst a third set of butter makers say that it ought to be worked by means of a wooden skimming dish, and that to work it in any degree by the hand is to spoil it, for the heat and perspiration, which is said to render the butter waxy. Mr. Ballantine's method, as detailed in the prize report in the *Transactions of the Highland Society*, was to extract the milk by working it with the cool hand, but the butter itself was not washed or worked in water. Mr. Dillon Croker, who paid great attention to the management of butter, recommended that, after finishing the churning, the milk should be drawn off by a plug from the bottom of the churn, and replaced by a quantity of pure spring water. A few turns of the wheel is then given, and the water run off; this is to be repeated until the water appears as clean as when it is put into the churn, showing that the milk has been all extracted. A strong

pickle, well strained is now put on the butter and several turns of the paddles given, so that every part will feel the effect, which finishes the operation. If the weather should prove warm, it will be advisable, he considered, to let the butter lie in the churn for a few hours, which will render it firmer than it was when the washing was finished.

The salting process should commence directly after the buttermilk has been all extracted from the butter, and the quantity of salt must be regulated by the purpose for which the butter is intended. When it is to be sold merely powdered, a quarter of an ounce of salt will be a sufficient for a pound of butter. For ordinary keeping purposes, or the London market, it may be cured with half an ounce of salt to the bound of butter, and many add a quarter of an ounce of yellow sugar, and one-eighth of an ounce of powdered nitre. For export to the colonies, or long keeping, more salt is necessary, and as much as one ounce of salt, with a proportionate quantity of sugar, and the foregoing quantity of nitre, will be required. Nitre and sugar are both omitted by many, but these ingredients assist in flavoring and preserving the latter.

The salt used must be of the purest description, free from salts of lime and magnesia which exist in ordinary sea salt. Prof. Johnson recommended the purification of common salt for dairy purposes "by pouring two quarts of boiling water upon one stone or two of salt; stirring the whole well about, now and then, for a couple of hours, and afterwards straining it through a clean cloth. The water which runs through it is a saturated solution of salt, and contains all the impurities, but may be used for common culinary purposes, or may be mixed with the food of cattle. The salt which remains in the cloth is free from the soluble salts of lime and magnesia, and may be hung up in the cloth till it is dry enough to be used for mixing with the butter, or with cheese." The salt must be rendered as fine as possible, which may be done by crushing it with a rolling-pin, and the nitre and sugar well mixed with salt, when these ingredients are used along with it. In salting, the butter is spread out thin in the tub, and the salt, &c., carefully sprinkled over it, and worked in with "the heel of the hand," until the whole is thoroughly intermixed. Some only work in half the salt at first, and then lay the butter aside till next day, when the remainder is added after pouring off any brine which has come from the butter. A great deal of Irish butter is spoilt by over salting.

When the salting process is completed, the butter is packed into "crops"—earthenware jars—or into small casks. The former answers well enough when the butter is intended for home use, but when it is to be sent by rail or steam-boat it should be packed in firkins. These are made of ash and oak, and previous to being filled with butter, they must be first filled with boiling water which will be allowed to remain in them for 20

or 24 hours; they are then rinsed in clean, cold water, and filled with strong, hot pickle, which may remain in them until they are required for use. The firkins are weighed before the butter is put in, and half a being allowed for any additional soakage that may take place, the weight of the firkin is branded upon it. A little fine salt is then sprinkled in the bottom, and the butter packed tightly with a wooden rammer, or with the knuckles, and the greatest attention must be paid to this operation, so that there shall not be any vacant point left, as the air contained in that vacant space, no matter how small, would soon spoil the butter. If the firkin or jar is not filled at one churning, the butter must be covered with pickle, or some salt is sprinkled over it, and a clean cloth pressed close upon it, to keep out the air until the next churning is ready, when the pickle is poured off, or the salt carefully removed with a spoon, and the smooth surface is roughened or raised into furrows, for the purpose of allowing the last packed butter to become perfectly united to the first, without any appearance of seam, which would be the case were this precaution neglected. When the firkin or jar is filled, a little salt is strewn on the surface, and a piece of linen, dipped in strong salt and water, is spread equally over the top, when the cask may be headed, and is then ready for market, to which it should be sent with as little delay as possible.

Butter which has been improperly packed, or otherwise affected by the air, becomes rancid; but this may be cured by beating in water into which from 12 to 15 drops of chloride of lime to the pound of butter have been added. After working it well, leave it lying in the water for two hours, and then wash it in pure cold water, when it will be found to have become sweetened.

#### CHEESE.

There is considerable diversity in the manufacture of this article; so much so that not only is there a marked disunion between the cheesy produced in different districts, but it frequently happens that such is also the case on adjoining farms in the same district. In the latter case, no doubt, whilst the distinction may arise from natural causes, such as the nature of the pasture, and of the breed to which the cows belong; still it is well known that much of the character of cheese arises from the manner in which the milk has been previously treated, and, in the case of skim milk cheese, from the proportion of cream which has been allowed to remain on the milk. Some "goodwives" are notorious for keeping what is called "a good creaming-dish;" that is, they are very particular in removing every particle of cream from the milk, for the purpose of making butter, and the cheese made from such milk is, therefore, of a peculiarly leathery texture. It was an article of this kind which elicited a rather pithy criticism from a half-witted fellow who got a living by running errands about Dunblane, in Scotland. On one occasion, he was



sent to a farm-house where the "creaming-dish" was very vigorously used, and on being set down to a repast being composed of bread, butter, and cheese, he was observed to spread the butter pretty thickly over slices of cheese, muttering all the while, quite loud enough to be heard by the bystanders, "Deil be in their fingers that ever paired ye."

But it appears to be the case that for some unknown reason cheese cannot be successfully made in some parts of the country, and we have found some marked instances of this in Ireland, both on the sown grasses of a five shift course and on the old pastures of the Golden Vale, and that, too, where it had been tried by persons who had been all their lives well acquainted with the process of manufacture as practised in Cheshire and Ayrshire. At the same time, we found excellent cheese made on other farms at no great distance, but certainly where the soil and pasture were somewhat different, showing that there is nothing in the climate at least, as some allege, to prevent cheese making being carried on in Ireland. It has never gained a footing in Ireland, however.

When skimmed milk is set aside for cheese making it must be scalded, but *not* boiled, in order to prevent it from turning sour, which would spoil the cheese. In making sweet milk cheese—that is, when the milk is used without being deprived of the cream—the morning's milk is mixed with that of the preceding evening—supposing there is a sufficient quantity of milk to allow a whole cheese to be made every day—the cream which has gathered on the evening's milk being mixed through the entire quantity, the temperature of the whole being raised to a certain degree by heating a sufficient quantity of milk in a pan set in boiling water, and then pouring this warmed milk into the rest. The temperature to which the milk is raised ranges from 75° to 80°, and even 90°, a higher temperature being requisite in cold than in warm weather. The milk at this stage is all in one tub, and it is at this point that the "rennet" is added. This is prepared from calves' stomachs, which have been salted a year before they are used. These can generally be procured from shopkeepers in the dairy districts; and where cheese is the sole object of manufacture, two "bags," or "vells," as they are sometimes termed, are necessary for the milk of each cow during the season. In some cheese districts, stale rennet is used; in others, as in Cheshire, it is prepared on the day previous to being put into the milk. The Cheshire system is to cut two bits of two or three square inches of the vells or bagskins, and those bits are "put into half a pint of warm water the day before use, along with a teaspoonful of salt, and this infusion suffices for 50 or 60 gallons of milk" (Morton). In Gloucestershire, where stale rennet is used, 6 vells are put to every 2 gallons of brine, and in large dairies a 30 to 40 gallon cask is prepared at once. The infusion is considered to improve with age, that is, if it is not further di-

luted by the addition of more brine. Stale rennet is also used in Ayrshire in the manufacture of Dunlop cheese, and in that which is made according to the Cheddar system, a tablespoonful of the rennet being added to every 20 gallons of milk. It is at this stage also that annatto is added for the purpose of colouring the cheese—a practice which, we think, ought to be given up; for it is only a mere fancy, and does not improve the quality of the cheese in any degree.

The time requisite for coagulation varies according to the temperature of the milk when the rennet is put into it. Where the temperature ranges from 75 to 80 degrees, the curd will usually take an hour to form; but where the temperature is from 85 to 90 degrees, it may only require half the time, or even less. Too rapid coagulation is not desirable.

The subsequent steps in the manufacture of Cheshire cheese are described in the following manner in Morton's excellent little work, the *The Hand book of Dairy Husbandry*. After the curd is fully formed,

"It is then cut slowly with a wire curd-breaker, and the curd sinking, the whey is baled out; the curd is collected and squeezed, both by hand and the direct pressure of a weight above a board placed upon it; and the last of the whey being removed, it is lifted either into a basket or into one of the Cheshire cheese vats ('thrusting tubs') pierced with holes for the further escape of the fluid, the lower part being a wooden cylindrical vat, and the upper a tinued cylinder slipping into it, as the curd on pressure sinks. After a certain pressure in this form, the curd is removed and cut, and broken by hand or a curd mill, and from 1 to 2 lbs. of fine salt is scattered over it, according to the weight of the cheese; about 1 lb. to every 40 lbs. of cheese is a common quantity. The whole curd being then re-broken, is refilled into the vat, in which a cheese cloth has previously been placed. It is then put gradually under pressure [in a lever cheese press,] which after the second or third day amounts to nearly a ton weight upon each cheese.

"Every day the cheese is turned, and wrapped in fresh cloths, and on the seventh or eighth day of this treatment, or as soon as dry, it is removed to the loft, and there swathed around with strong ginning, and placed on a bench. By-and-by it is laid, still swathed as before, on a layer of straw on the floor of the room, and there it lies till from ten weeks to four months old, when it is ready for sale."

It is of the greatest importance that the curd be freed entirely from the whey; for if any whey is left, the cheese is apt to swell and burst. For this reason, in some dairies it is the practice, on the first day when the cheese is put under the press, to thrust skewers into it through the holes in the cheese-vats, in order that the whey may more readily drain off through the holes pierced with skewers. The whey is scalded and given to pigs.

**VARNISHING CHEESE.**—A writer in the *Dairy Farmer* states that it is the practice of some dairy-men to coat each cheese thinly with varnish made from shellac dissolved in alcohol, when about to ship to market. It is said to improve the appearance of the cheese and to keep it from losing weight and gathering mold. We cannot say as to the value of its recommendation.

## Domestic.

### Housekeepers' Recipes.

**To Make White Indian Meal Cakes.**—I read one of your receipts for making "Indian cakes" to my wife, from one of your late numbers, and we had a laugh over it. Annexed is her mode of making them: To enough white meal for breakfast add sufficient salt, then mix entirely with boiling water, to the consistency of a stiff batter, and bake immediately on a hot griddle, well greased—the batter to be put on the griddle with a large spoon, one spoonful for each cake. No mixture of Indian meal can exceed these cakes in delicacy of flavor. This is the way we make them down in Delaware.—*Germantown Telegraph.*

**For Killing Rats.**—Mix some unslacked lime with corn meal, and place it where the rats may accidentally find it. They will soon become very thirsty, and upon drinking water, the lime slacks and swells the rat till it kills him. In the Bahama Isles, sponge is fried and placed in in their way; they eat it, drink, swell, burst and die. Lime and meal should be, of the first one part and meal two parts, well mixed together and dry.

**Starch.**—There is no better way for making nice starch for shirt bosoms, than to boil it thoroughly after mixing, adding a little fine salt and a few shavings of a star or spermaceti candle; the star or pressed candle is quite as good as sperm. Let the starch boil at least ten minutes, and it will give a gloss, if neatly ironed, fully satisfactory.

**Mince Pie without Meat.**—Four soda crackers, four cups of water, two cups of sugar, one cup of butter, one cup of chopped raisins, half a cup of vinegar, one lemon, grated citron, nutmeg, allspice, cloves, cinnamon, etc.

**To Broil a Fowl.**—Split the fowl down the back, season it very well with pepper, and put it on the gridiron, with the inner part next the fire, and allow the fowl to remain until it is nearly half done; then turn it, taking great care that it does not burn. Broil it of a fine brown. A duck may be broiled in the same way. If the fowl is very large, half roast it, and then cut it into quarters and finish it on the gridiron.

**Indian Arrow Root.**—To a quart of meal, pour boiling water, stirring constantly until a

thick batter; let it cool; while warm, add a small teacup of butter, a teaspoonful of salt, and a tablespoonful of yeast, with two well-beaten eggs; set it on a warm place for two hours, then stir it smooth, and bake in small cakes on a griddle: when one side is rich brown turn the other; lay them singly on a hot dish, and serve. These may be made without the yeast, and baked as soon as mixed.

**Muffins.**—Mix a quart of wheat flower smoothly with a pint and a half of lukewarm milk, half a teacup of yeast, a couple of beaten eggs, a teaspoonful of salt, a couple of table-spoonful of lukewarm melted butter. Set the batter in a warm place to rise. When light, butter your muffin cups, turn in the mixture, and bake the muffins a light brown.

**Cleaning Papered Walls.**—The prudent housewife who, on account of "hard times," has decided not to re-paper the sitting-room, as desirable, will find the old paper very much improve in appearance by simply rubbing it well with a flannel cloth dipped in oatmeal.

**To Clean Knives.**—One of the best substances for cleaning knives and forks is charcoal, reduced to a fine powder, and applied in the same manner as brick-dust is used. This is a recent and valuable discovery.

### Preparation of Chicory.

**EDITORS OF THE AGRICULTURIST.**—Can you or any of your subscribers inform us of the best way to prepare chicory for mixing with coffee? We grow it, and are fond of it, but think we have not the proper method of preparing it for use.

NIAGARA, Jan. 1862.

W. C.

[We are not aware that there is any other mode of preparing chicory for use as a substitute for coffee, than that of first drying, and then roasting and grinding the root. After the roots have been cleaned, and sliced in the thick parts, they may be placed in an oven, after the bread has been removed, and remain there till they cool. If one such baking should not dry them sufficiently the operation may be repeated. The Rev. W. L. Rham, in his Dictionary of the Farm, in speaking of the cultivation and preparation of chicory in Belgium and Germany as an article of commerce, says:—

"In September the leaves should be finally gathered and the roots taken up, which may be done with a common potato fork. They are then cleaned by scraping and washing, split about two or three inches long. These pieces



are dried by means of a slow oven or a kiln. Some nicety is required in drying, to prevent the root from being scorched, and to keep the proper flavor. In this state it is sold to the merchants, packed in bags. It is afterwards cut or chopped into small pieces, and roasted exactly as coffee, ground in a mill, and packed in papers in pounds and half pounds for retail sale. When coffee, as well as all colonial produce, became too dear for the laboring classes in France and Germany, chicory was almost universally used as the best substitute, and the taste is by many thought so grateful, that they prefer the coffee with which a fourth or a fifth part of chicory has been mixed."

We have seen it stated that chicory is apt to produce injurious effects upon the constitution when used too freely. Should any of our correspondents know a better way of preparing it for use than the above, we shall be happy to hear from them.—EDITORS AGRICULTURIST.]

## The Poultry Yard.

### Profitable Poultry Keeping.

*Fowls and their Breeds.*—A poultry keeper, in the *Journal of Horticulture*, places in order of profitable merit different fowls, in the following order:—

1. *The Speckled Dorking.*—Good layers, setters, and nurses; chickens come early to profit; preferred by dealer.

2. *The White Dorking.*—Flesh of these chickens a better color than the speckled.

3. *The Hamburg Everlasting Layers.*—Lay from 200 to 250 eggs yearly; do not sit well; flesh good.

4. *The Game.*—Flesh and eggs excellent; but rear with difficulty.

5. *The Cochins.*—Best for confined places; rear early; eggs excellent, sits true; good nurses; flesh not very good.

6. *The Spanish.*—Shy layers, poor sitters; bad nurses; eggs large and poorish; do not rear well. Poultry should be kept perfectly clean, have access to chalk, and a dust heap carefully kept dry for them to busk in.

## Poultry.

We are indebted to the *Irish Farmer's Gazette* for the following remarks, gathered from different sources. In the old country fowls are generally prepared for table in the natural way, but French feeders prefer a system of forced feeding, the details of which may be gathered from the following description given in a recent number of the *Journal of Agriculture*:—

"A sketch of the mode in which the La Fleche virgin cocks and poulards are fattened will convey a good notion of the manner in which this process is frequently managed in France. It is undertaken chiefly by country dealers and small cultivators, called *poulaillers*, and although attended with a good deal of trouble and expense, they manage to realise fair profits—some of them even small fortunes. The individuals buy up, from the markets and their neighbours, the young *coqs vierges* and pullets, which they name *gêmines*, that appear to be finest, and best fitted for fattening. About the age of seven or eight months, they are considered best adapted to the purpose. From fifty to a hundred are subjected to the process at one time, and it generally commences in October. In the apartment where it takes place, a series of boxes or frames, formed of rough timber, are placed on the floor—one portion of the covering fixed, the other movable—for the purpose of putting in and taking out the fowls. The dimensions of these boxes vary, but they should never contain more than six birds, and the space should be such as to accommodate each comfortably, without permitting it to move about. No light is admitted from without, and very little air. In order to accustom the fowls gradually to the dietary regimen and seclusion to which they are to be subjected, for the first eight days they are enclosed in a place only partially darkened, and fed on a somewhat thin paste, composed of meal, with a mixture of a third or a half of bran, and they are allowed to eat and drink at pleasure. The paste cakes, or *patons*, on which they are to be fattened, are composed, the one-half of buckwheat meal, a third of barley meal, a sixth of oatmeal, the coarse bran being removed. Every day this substance is steeped in milk in the quantity necessary for two meals. Some add to the paste a little lard, particularly when the treatment is drawing to a close. Being neither too hard nor soft, it is easily rolled in small cakes or *patons* nearly in the form of an olive, and of a size adapted to the throat of the fowls.

The times of feeding require to be strictly attended to, and the poultryman or feeder, aided by the light of a lamp, takes three fowls at once, ties them altogether by the feet, and rests them on his knees. He then makes them swallow a spoonful of water or whey (although this

is occasionally dispensed with), inserts a paton in the beak of each, and gently slips it downwards by the pressure of his two fore-fingers and thumb, rubbing his hand along the neck till the food reaches its destination: this prevents its being rejected. The time required for this in each case affords sufficient leisure for deglutition in the others. During the first few days only a small number of patons are given, but they are gradually increased till each dose consists of a dozen or fifteen. They are dipped in water before being administered, in order that they may be more easily swallowed. By this process some fowls are fattened in six weeks, others take two months; the time depends on the constitution of the animal and its degree of strength. Some cannot be brought to the desired plumpness without risk, and in such cases the feeding must be interrupted or modified, as the occasion seems to demand. It is calculated that some fowls consume 20 litres of meal, others one-half more. Two feeds must be regularly given in the twenty-four hours, and the diet indicated must never be altered in its composition. A curious feature in the process is, that the feeding-house must never be cleaned, the fowls have no litter under them, and their dung is never removed. The highly azotised emanations which prevail in the feeding-house are considered necessary to assist the fattening process, although they are disagreeable to the attendants, and not seldom injurious to their health. The fowls are never subjected to any mutilation, as is the case with capons, and often with fowls fattened in other ways. The finer specimens of poulardes attain a weight of upwards of 8 lb, the cocks 13 lb., and these weights are sometimes exceeded."

Another mode of forced feeding consists in

"Causing the fowls to swallow, by means of a funnel inserted into the mouth, farinaceous substances in a liquid state. This latter method, named *entonnage*, is so simple and rapid, that it is thought likely to be adopted in preference to any other. The filler or funnel, made of white iron, should be of sufficient size to hold one meal, having a ring below the rim externally for receiving the forefinger and thumb, and the orifice at the lower extremity cut aslant, the edges surrounded with a thin coating of india-rubber, to prevent injury to the walls of the throat. The beverage, which by this means is to be introduced, consists of barley meal (not bruised barley), mixed up without knots in equal parts of milk and water. When all is ready, the fowl is seized by the wings near the shoulder, the head held forward between the knees and grasped by the left hand, while the right holds the funnel, opens the beak, introduces the instrument into the gullet, and the proper quantity of the mixture is poured in. The quantity of the latter should be about the eighth part of a litre, but only half that quantity is given during the first three days. This dose must be given regularly three times in the

four-and-twenty hours, at intervals of eight hours. The boxes or frames containing the fowls should be placed in a stable or other temperate place, protected from currents of air, and they should be littered with straw, the litter frequently renewed, and every impurity removed, unlike the practice followed with the *La Fleche* pullets. The duration of this treatment is from fifteen to twenty days; if it fails to be successful within that time, the subjects should be withdrawn and otherwise disposed of."

Alluding to the insipidity of the flesh of poultry as an article of food, and which we endeavour to correct by eating it along with ham or tongue, the writer of the article in the *Journal of Agriculture* suggests the possibility of imparting different degrees and kinds of flavour to it by mingling aromatic substances with the usual farinaceous food, the forcing system of feeding presenting the means of accomplishing this end. He reasons from the fact that the nature of the food has an effect on the flesh of animals—thus, "that of the capercaille has the scent of the fir shoots on which the bird feeds; hares inhabiting low wooded regions have less flavour than such as live on mountains. Domestic rabbits are always insipid when compared with wild ones. Birds feeding on certain berries—those, for example, of the juniper—acquire the perfume of their principal food." The flesh of grouse, also, he might have added, has a strong flavour of heather shoots. "Flavoured berries, such as the juniper, the aromatic buds of trees, tops of labiate plants, such as thyme, lavender, odoriferous barks, &c., would form the materials to work with. They would not require to be used but towards the close of the period of fattening, as a short treatment would be sufficient to perfume, at our wish, the whole flesh of the animal. In this way the value of our common fowls might be greatly increased, and they might be brought to equal, and even surpass, many kinds of game." The suggestion is well worth being put to the test of careful practical experiment.

The exhibition of fowls at poultry shows having now become a subject of general interest, we shall be doing young exhibitors a service by transcribing the following useful remarks on this subject from the poultry department of the *Journal of Horticulture* (Nov. 19, 1861):—

"Fowls, to be successful, must be sent in high condition; but even in those classes where weight is an essential, mere fat will not do—large frame-work is necessary. Judges are not guided by mere weight, but the size of the fowl is ascertained and tested by measurement. Excessive fat, so far from being desirable, is a great disadvantage. Fowls suffering from it are necessarily dull and sleepy, they get into the corner of a cage, whence they will hardly allow themselves to be moved, and are spiritless and unattractive. The greatest amount of weight must be attained that is consistent with exer-



cise and hard condition. Beauty of plumage is a great help to success, and this cannot exist with much fat, as its tendency is to loosen the feathers and make them hollow. Fowls should be sent to a show with clean plumage, and those that should be white and are not white should be washed to make them so. Soap and water may be easily and safely used with a flannel; and if the birds are afterwards put in a straw basket with soft straw, and placed before a good fire, they soon become dry. All fowls should also be sent to a show with clean legs. Even where the birds shown do not belong to a breed of which feather is the principal merit, it is desirable to choose those that match as nearly as possible; and in every breed it must be recollected that positive similarity of comb and colour are imperatively necessary to constitute a competing hen in *any* class.

"We advise sending fowls away early to a show. They get more care in unpacking, and they look better before the judges, from having had more time to recover the effects of packing and the journey. It is, besides, due to the members of any committee who undertake the task of unpacking. There is no reason why they should be kept at their unpleasant work all night. It is also far better, where they have a long journey before them, that fowls should travel at night. Those who manage to a nicety are sometimes too late, and at others they arrive after the judges have commenced their work. One is almost as bad as the other. With regard to the food they should have before they start, it should be of a light character. They have no opportunity in their baskets of finding stones to assist in digestion, and for that reason we object to whole corn. We believe sopped bread to be the best thing they can have, and in very severe weather it is a wise precaution to give them a part of their meal steeped in strong beer."

"All baskets should be round, to prevent any feathers from being broken. There is no angle in such a one for a bird to get into to escape from beating, or to crouch to roost. If it is in motion, the tail follows round, and the feathers are not injured. The basket should be covered with double canvas. It should be large enough to allow all the birds to sit down, and high enough to allow the cock to stand upright without injury to comb or top-knot."

(Concluded in next number.)

## The Apiary.

### On the Management of Bees.

To the Editor of the Canadian Agriculturist.

SIR,—In the October number of your valuable journal I noticed the following enquiries by "Apriarian," addressed to the bee-keeping community, for information as to the results of their

experience in reference to the most profitable system, stating the average yield of honey, cost of stocks or swarms, the best time to stock an apiary, and any other particulars that might be useful? I have been looking for the requested information in answer to those enquiries, in the subsequent numbers of your publication, as an interchange of sentiment upon the practice of this pursuit, would have been acceptable to myself and, no doubt, to many others of your subscribers, especially from those apianians who have made it a special business, but have not yet met with it. In the absence of such information, I here submit a brief statement of part of my experience, in connection with particulars from other sources. But, from the limits of a communication of this sort, much of the details of operations in manipulating with the bees is necessarily omitted.

Having taken much interest in the natural history and practical management of this wonderful insect for the past twenty years, and keeping a limited number of stocks, I conceived this insect evidently intended for domestication, as much so as any other stock of the farm, its instincts and habits being devised in reference to the benefit of man.

This branch of rural industry is in a very low state, from the small amount of encouragement given by the different local agricultural societies in Canada West, in connection with the large number of failures,—by which bee-keepers have had to renew their stock every few years,—arising from defective management, and too often no management, excepting, of course, the hiving of a swarm and placing it upon the stand, and leaving the subsequent results to luck. The absurdity of a corresponding amount of management in connection with other crops, would be easily seen, and failure anticipated. This low state of the industry has given rise to an unfavorable impression in regard to its profitability and importance, as a natural resource of the country. But a land flowing with milk is inseparably connected with a flow of honey. And if the practical knowledge and attention be given, that the present state of improved bee-management requires, it can be made a profitable business. On the other hand, a deceptive or too sanguine an impression may be produced, from the perusal of those accounts of large profits inserted in many of the published papers, perhaps the results of one year in ten.

The average yield of honey in one locality will not be a reliable criterion for an expected result in another, as different seasons, situation, and the strength of the stock, materially affect the amount of the returns. In the absence of a record of profits, I should judge that from 30 to 50 per cent. on the capital invested in honey would be a safe estimate, leaving a limited number of young stocks, to offset expenses of hives, stands, &c. The prospective profits of the lo-

cality, in which your correspondent resides, will be best judged of, from a view of the surrounding vegetation. White clover, buckwheat, linden, raspberry, the orchards, &c., are the chief sources from which honey is obtained in this country. But white clover takes precedence of all other plants, for its superiority in quantity and quality, often denominated *Fine Canada*.

The growth, maturity, and harvesting of all crops in Canada, is confined to a limited period, and the harvest of honey is not an exception. Consequently, the strength of the stocks should be promoted in advance, by every means within the power of the apiarian, so as to meet the required demand of labour, for a successful improvement of the short time allotted for an efficient gathering of not only an abundance but often a superabundance of the honey, that may be secreted by plants in blossom. For its duration upon the blossoms may prove uncertain. The pasture of bees, is not like pasture of other stock, what is left by cattle to-day can be eaten the next, or the next week, but a storm of rain or a few days of wet weather, will wash the greatest abundance from the blossoms, or a cold spell of weather or drought may check the plentiful secretion for that season. It is obvious from this reasoning, if correct, that *strong stocks*, at the commencement of the season, in this climate, are *the foundation of certain success*, other circumstances being equal, as it is only those stocks, in ordinary seasons, that will realize a surplus of honey, over the quantity required to keep them over winter; and in a season of scarcity, weak stocks must perish, if not previously fed, taken up, or united with other stock. Therefore, assuming my stocks to be strong, at the commencement of the honey and swarming season, I endeavour to keep them so, by limiting the swarms, and returning them to the old stocks, or if movable comb-hives are in use, remove the remainder of queen's cells, in excess of the number of swarms permitted to leave. This hive is an improvement upon the chamber-box, barhives, and a legion of worthless patents, as it gives the apiarian control and power of inspecting the interior, and the past seasons's trial by myself will justify their future use. This mode of increase of stocks is much at variance with the practice of a large number of beekeepers throughout the country. The advantages over the old system are unquestionable, whatever merits other methods may possess, as the loss and waste of a valuable swarm, brood, and bee-bread, with the labour and time in accumulating this wasted product committed to the brimstone pit are *saved*, and are properly directed in the most profitable way, when the increase must be saved or lost. And it will prove ultimately a better guarantee of profitable increase than where more swarms, that is to say, all the first and consequently the best swarms, are allowed to leave without reducing the old stock to become a prey to the moth.

The best time to stock an apiary, is the last of winter or early spring. The operation at this time is attended with the least loss of bees, and any reasonable enhancement of price over the fall stock, will be fully compensated for in the avoidance of care and risk of wintering; although bees can be removed at any seasons of the year, and successfully when swarming, and artificial swarms are the better for being removed some distance. The price of stock will average four dollars, in this section of the country, in common boxhives. Some practical experience in purchasing, is necessary at any season of the year. The common method of judging by the weight of the skip, is not always a safe guide, as old stocks are much heavier in proportion to their contents, and many queenless hives will prove quite heavy.

Some care and attention are requisite in wintering bees, more from the length than the severity of the winter, in order to counteract the accumulation of moisture, generated in all wooden hives, by the breath and heat of the bees becoming frozen, without direct or upright ventilation, but this is in some measure a necessary evil. This is the reason that the common boxhive, placed upon blocks or pins, is so successful, exposed as it is, in many instances, to every vicissitude of the weather. The cold, dry air, and driving winds, dry up the moisture in some measure, but at the expense of the vitality and animal heat of the bees, and extra consumption of food. The evils of this unmerciful exposure of bees, to the severity of a Canadian winter, are increased by the sudden changes of temperature, as a sudden change from a thaw to severe freezing, before the inside becomes dry, will often prove fatal. But, as protection and properly regulated ventilation becomes better understood, this old system will gradually disappear.

Straw hives are better adapted to wintering bees, than wood, as this material is a non-conductor, consequently warmer in winter and cooler in summer, and will absorb and evaporate moisture, and when combined with external protection, either of the same material or wood, will obviate the necessity of direct upright ventilation. But where movable comb-frames and surplus honey boxes are the system, the straw cannot be worked into the proper shape, without being combined with wood. And those complicated arrangements for ventilation can never be adjusted to the sudden changes of the weather by ordinary beekeepers.

There are some objections to straw, as affording a harbour for the moth, but the depredations of this enemy of the bee are better prevented by other means than the adoption of any material of which the hive is constructed, as they will enter any hive that was ever invented, if not prevented by the bees themselves. And honey boxes are the best in every respect for the deposit of surplus honey, both for its security of



transport and convenience of keeping, and a sure guarantee of its purity, devoid of beebread and broodecomb, as the bee store it for themselves, and not for the owner. Whereas hive honey is more or less intermixed with beebread and broodecomb, and the separation cannot be effected in all of it without straining one through the other.

The scarcity of honey has given rise to heavy importations of Cuban, and other West India honey, much of it unfit for table consumption, the best often repacked in kegs, and sold as strained Canadian honey, but box honey requires no warrantee for its purity, and the comb will not exceed one-third of an ounce to the pound. A public revenue derived from this source, as compared with the present public expenditure, through importations, or even a supply equivalent to the demand for home consumption, appears somewhat distant, and will remain so until a corresponding interest is awakened in this branch of rural economy.

The importance attached to this pursuit in Germany, where it is followed as a profitable employment by a large number of its population, and the interest evinced by a large portion of the clergy, as practical aparians, aided by several publications devoted to this and its kindred subjects, have produced corresponding public results, as a few figures here, taken from Longstroth, furnished by Wagner from the statistical tables of Hanover, will show.

The average annual production of wax, in the province of Lunenburg, is 300,000 lbs., and assuming one pound of wax for each hive, we have that number taken up, and computing the whole number, with every allowance for casualties, the lowest estimate would be 600,000 stocks, giving 141 to each square mile, to secure the results in the tables, and this district is so barren that it has been called the Arabia of Germany. And according to Etül, page 339, Bohemia contained 160,000 stocks in 1853, and from a careful estimate, he thinks the country would support four times that number,—the kingdom contains 20,200 square miles. The official reports of Denmark show the export of wax to be from that country, 118,379 lbs. In 1857, the official estimates returned 58,964 stocks for the kingdom of Wirtemberg. And in the same year the yield of honey and wax, in the empire of Austria, was estimated at seven millions of dollars.

As there is unquestionably a lack of information and a degree of uncertainty existing in the minds of a large number of bee-keepers, as to the best method and the probable profits of bee-keeping, it would tend much to the removal of those apparent difficulties, if the different systems were made public, through the columns of your journal.

Respectfully,

JAS. HESLOP.

West Flamboro', Jan. 5th, 1862.

## Veterinary.

### Warts on Cattle.

MR. EDITOR:—Will you please inform me through the columns of the *Farmer* what is the most effective cure for warts on cattle? If you will you will greatly oblige G. C. E.

NOTE. There are several modes of curing warts. Nitric acid diluted with water, applied occasionally, has been successfully used. Chloride of zinc made into a paste with an equal amount of flour, and applied, will act as a caustic and destroy them. A tincture of iodine applied two or three times a week has been known to destroy them. All these things act as caustic more or less strong, which destroys the vitality of the wart, and it is then thrown off as dead matter.—Ed.

We cut the above from an exchange paper. Warts consist in a morbidly increased growth of the outer skin. They generally originate on young animals, and are supposed to be associated with that state of the system when the tissues are in a growing state, as they usually appear during the period of growth, and disappear as age advances. Epidermic warts, when seen in the horse, are found to occupy various situations, as on the nose, eyelids, ears, between the hind legs, or sheath, and under the abdomen. When occurring in cattle, they are chiefly confined to the inferior parts of the abdomen, teats, dewlap, or about the head.

*Treatment.*—The easiest and quickest method of getting rid of warts, when extending over a large surface, is to remove as much as possible with the knife, and apply a hot iron to stop the bleeding, or tie the blood-vessels, and afterwards dress cautiously with arsenical ointment, at intervals of several days. When presenting a well defined neck they may be removed by tying tightly around them a piece of waxed whip-cord; this cuts off all nutrition, and as a consequence they drop off. Calomel is also useful in removing these excrescences.

### The Cattle Disease in Montgomeryshire, Wales.

[REPORT OF PROFESSOR SIMONDS.]

Royal Veterinary College.

In continuation of my former report on the outbreak of a destructive disease among the cattle belonging principally to Mr. Harvey

Jones' tenants in the parish of Llandinam, Montgomeryshire, I have to speak more fully of the nature of the affection, and the causes which produced it; as also of the means which were adopted to arrest its progress, together with the result. In the previous report it was stated that upwards of fifty animals, of various ages, had died up to the time of my visit, and that others were being attacked almost daily. For the first few days after my investigation, the disease continued to prevail with unabated fatality, but it then ceased, and no more cases have since occurred. This sudden disappearance of the affection I believe to be entirely due to the preventive measures which were adopted, and I am warranted in giving this opinion, because all the local causes were still existing.

*Causes.*—Under this head we must class the kind of weather which prevailed during the existence of the disease, the nature of the soil, the character of the food, and the management pursued towards the animals.

The cases occurred principally during October—a month remarkable for its humidity and warmth. The state of atmosphere which then prevailed was accompanied with heavy fogs, and particularly in the district in question. The fogs often hung over the fields excepting for an hour or two throughout the entire day, and were so dense as frequently to hide the animals from observation, although but a few yards distant. Constant exposure to weather of this kind would of itself prove detrimental to health, by impeding the process of respiration, and also the decarbonization of the blood; but besides this it would have an indirect effect on the animal economy no less injurious.

Speaking in general terms of the entire parish, it may be said to have a character of soil described as a clayey loam overlying slate shale. The soil is necessarily very retentive of moisture, and as much more rain had fallen in the district than, as may be said by way of contrast, had done in the vicinity of London or elsewhere, so the land was more than ordinarily wet. I was particularly struck with this, for many of the roads leading to different farms were literally mid-leg deep in mud, and perfectly impassable except on horseback.

The warmth of the atmosphere necessarily induced under such circumstances an abundant growth of grass, and it was stated, in answer to my inquiries, that more keep existed in the pastures than was often to be found in the month of June. The grass however produced under these circumstances would of necessity be not only surcharged with moisture, but proportionally deficient both in albuminous and other proximate principles which are imperatively necessary for the making of pure and healthy blood. Hence

we have another powerful cause in the food itself in inducing the disease.

The abundance of grass likewise led the proprietors of the cattle to leave the animals out night and day without any other provender, with a view of saving their winter keep.

These several things being combined brought about a state of the blood by which it was unfitted for the purposes of life, and as an immediate consequence, local hæmastasia resulted—in other words, the contaminated blood became partially stagnant in the vessels. Sometimes this stagnation took place in one part of the system and sometimes in another. The affected structures became swollen, hard, and painful. The head and throat were the principal seat of the local symptoms, but occasionally the fore or the hind extremities would be attacked. Nor were the external organs exempt, as the lungs were now and then primarily affected.

The duration of the malady varied a little, but was rarely longer than 24 hours; while many of the animals, apparently unaffected in the morning, were dead before night.

In several respects the local symptoms were closely allied to those seen in hæmatosepsis, "black leg," but no gaseous matters were evolved into the cellular tissue, as is the case in that malady. Cattle also of all ages were its victims, and that without respect to their being milking or fattening animals, or store stock.

It was not to be expected that curative means would be of much avail in such a disease, and therefore I learned, without surprise, that little or no advantage had resulted from their application. A case occurring while I was staying with Mr. Powell, Mr. Jones's agent, and the chief occupier in the parish, afforded me the opportunity of giving trial to curative measures, but without much relief, as the animal died in about twenty-eight hours from the time of the attack.

*Preventives.*—It was self-evident that benefit could only result from the application of prophylactics, and especially from removing the causes of the disease to as great extent as possible. With this view I ordered that the animals should no longer be kept in the pastures at night, but be brought into the yards and fed on hay, hay chaff, and bran, and also crushed corn. It appeared to me to be a matter of minor importance what kind of corn was given, and therefore this varied in different instances according to the convenience of the occupier. The chief thing was to limit the amount of succulent diet, and to substitute food rich in the elements of blood. Instructions were also given for the animals to be kept entirely in the sheds and yards on foggy, but especially on wet days.

Besides this alteration in the diet, location, and management of the animals, orders were



given for each to take of nitrate of potash in powder in a bran mash every other night, from two to four drachms, varying according to its age and condition. These doses to be given to the extent of about six or eight in number.

In a few instances, as in Mr. Powell's case, who had been the greatest sufferer, I directed that an aperient combined with a diffusible stimulant should be administered at the commencement of the preventive treatment, which was to consist of sulphate of magnesia, half a pound; compound solution of aloes, from two to three ounces; compound tincture of gentian in the same quantities, and two drachms of powdered ginger. The whole to be given in some well boiled gruel.

As previously stated, these measures at once proved most effective for good, by entirely putting a stop to the further progress of the malady.

In concluding this report, I may remark that these cases possess an especial interest to the pathologist as tending to prove the necessity of giving greater heed to the state of the fluids in many affections of the solids than has hitherto been done, and also in showing that some of the most destructive maladies occurring among herbivorous animals depend immediately for their production on the quantity and quality of their food, the management which is pursued towards them, and the nature of the soil they inhabit.

They also prove to the practical agriculturist that very often the simplest means, when rightly directed and founded upon a scientific inquiry, will suffice to arrest the most fatal disease which may be raging among flocks or herds.

### Miscellaneous.

**THE DOMESTIC TYRANT.**—It is to me a thoroughly disgusting sight to see, as we sometimes do, the wife and children of a family kept in constant terror of the bashaw at the head of the house, and ever on the watch to yield in every petty manner to his whims and fancies. Sometimes, where he is a hard-wrought and anxious man, whose hard work earns his children's bread, and whose life is the sole stay it is needful that he should be deferred to in many things, lest the over-tasked brain, and over-strained nervous system should break down or grow unequal to the task. But I am not thinking of such cases. I mean cases in which the head of the family is a great fat, bullying, selfish, scoundrel; who devours sullenly the choice dishes at dinner, and walks into all the fruit or dessert, while his wife looks on in silence, and the awe-stricken children dare not hint that they would like a little of what the brutal hound is devouring. I mean cases in which the contempt-

ible dog is extremely well-dressed, while his wife and children's attire is thin and bare; in which he liberally tosses about his money in the billiard room, and goes off in autumn for a tour on the continent by himself, leaving them to the joyless routine of their unvaried life. It is sad to see the sudden hush that falls upon the little things when he enters the house: how their sports are cut short, and they try to steal away from the room. Would that I were the Emperor of Russia, and such a man my subject! Should not he taste the knot? Should not I make him howl? That would be his suitable punishment; for he will never feel what worthier mortals would regard as the heaviest penalty by far, the utter absence of confidence or real affection between him and his children when they grow up. He will not mind that there ever was a day when the toddling creatures set up a shout of delight at his entrance, and rushed at him, and scaled him, and searched his pockets, and pulled him about; nor that the day will never come when, growing into men and women, they will come to him for sympathy and guidance in their little trials and perplexities. Oh! woeful to think there are parents, held in general estimation, too, to whom their children would no more think of going for kindly sympathy, than they would think of going to Nova Zembla for warmth.—*Country Parson.*

**HABIT OF THE HIPPOPOTAMUS.**—There can be little doubt that the "Behemoth," of Scripture is identical with the animal we have named Hippopotamus. In the fortieth chapter of the book of Job, Behemoth is spoken of as an animal "that lieth down in the shade of the trees, in the covert of the reeds and fens:" "whose bones are as bars of iron." "He eateth grass, like an ox." "The shady trees cover him with their shadows; the willows of the brook compass him about." "Behold he drinketh up a river: he trusteth that he can draw up Jordan into his mouth." Although the researches of geologists have put it beyond doubt that, at a remote period of the world's history, the hippopotamus was common to Europe and Asia, it is now found only in Africa, and there not universally; with the exception of the Nile, none of the rivers that fall into the Mediterranean producing it. He is a shy brute, and retreats rapidly before civilization; indeed, it is only in the large and solitary rivers and lakes, running from the confines of the Cape Colony to about the twenty-third degree of north latitude, that the hippopotamus is found at home and at his ease. And no beast of the field can boast of a home so vastly grand and beautiful. Great silent lakes spread out on every side, with fairy islands dotting between—*islands* jutting green from the transparent water, and studded with the date, the black-stemmed mimosa, the wild wide spreading sycamore, the elegant mshoma, and other great straggling ragged fruit-bearers, the yellow, and scarlet, and pearly-white

fruit flickering and flashing in the sun, like colored lamps, and the wonderful fan palm, each leaf of which is as delicate and daintily shaped as a lady's fan, and which bears as fruit mahogany-coloured apples, that have for a core a round, hard, stony substance, like ivory. Through the rank underwood glide snakes of all the colours of the rainbow, and lizards, looking like animated masses of jewels; and above these dart and flutter birds, large and small, some with forked tails, and some with crowns, some vermilion, and some the colour of flame. The hippopotami at the Zoological Gardens, Regent's Park, are fine specimens. The larger of the two was shipped during its infancy, subsisting, during its voyage to England, on the milk of two cows and three goats. This, however, was soon found to be insufficient, so a few quarts of Indian meal were thrown in. By degrees he was "weaned," and vegetable diet supplied him instead of milk. At the present time his allowance is one hundredweight daily of hay, corn, bran, mangelwurzel, and white cabbage; and, during the ten years he has honoured this country by his presence, he has increased in weight more than a ton.—*Wild Sports of the World.*

**THE FLAX AND LINEN TRADE OF IRELAND.**—Belfast, the great emporium of the linen trade last year exported 65,000,000 yards of linen, and 13,200,000 lbs. of linen yard and thread. Next to importance to the flax industry is the trade in sewed muslins, employing about half a million persons in Ireland. Another manufacture carried on in Belfast is important in the consumption of agricultural produce—viz., starch-making from wheat. Ten firms use nearly 30,000 quarts of the finest red wheat every year. The wheaten starch made by the old fermentative process, is largely used by old bleachers, the goods retaining their stiffness longer than if dressed with rice and other starches. The whole of this business is at present paralyzed, as America was the best market for Irish linen goods, very limited quantities of which have been imported during the past nine months.

**Cows v. Horses.**—At a plowing match held on the estate of Right Hon. Earl Ducie, Crummel Park, we noticed a team of cows engaged in plowing at one end of the field; and as they appeared to excite a tolerable amount of attention, we thought it worth while to make a note or two on the spot. The animals were polled cows in full milk, and belonged to Mr. John Evans, of Woodford, Gloucestershire, who is, we believe, a small enterprising farmer. Two of the cows were rather old, the hindmost one, the owner assured us, had been worked regularly during the last seven years, and had had a calf every year, and one season was worked up to the day previous to calving. The middle cow was a three-year old, and this was her second season, the owner putting his cows to the plow at two years

old. Our readers must bear in mind that these cows were in full milk, being milked twice every day; on very hot days it was found necessary to milk them three times. Mr. Evans assured us that the cows gave more and richer milk when they were regularly worked, and that the goods were larger in amount, as well as better in quality; to use his own words when there was a less quality of goods made, his wife would tell him that he had not worked the cows so much, which was invariably the fact. Our readers will of course, imagine that the cows were, and ought to be well fed; hay, oil-cake bran and chaff, we were told, was the food given them during their working time. We give the opinion as to the policy of working dairy cows as above, leaving our readers to draw their own conclusion; we must say we thought it rather slow work, although the plowing was pretty well done, and there seemed no lack of strength or will on the part of the cows.

**AN EASY WAY TO DISSOLVE BONES.**—James S. Greenfield, practices dissolving bones by a method which seems worthy of notice from its simplicity and convenience. Casks having each but one head are provided; a layer of bones six or seven inches thick placed on the bottom; then strong, unleached wood ashes are spread over the bones to the thickness of two inches or more. The casks are filled in this way, taking care to have a pretty good thickness of ashes at the top to prevent the exhalation of ammonia. The process of thus packing the bones goes on through the season, as ashes accumulate in the house and they remain in the casks till spring, when the casks are emptied, and the bones are found to be generally well pulverized, or so soft that they can easily be broken as fine as desired. The mixed bones and ashes are excellent manure for most crops, and especially for fruit crops.—*Boston Cultivator.*

**PHYSICAL STRENGTH AND DEXTERITY.**—Physically, no man is made the most of. Look at an acrobat or a boxer: there is what your limb might have been made for strength and agility. That is the potential which is in human nature in these respects. I never witnessed a prize-fight, and assuredly I never will witness one; but I am told that when the champions appear in the ring, stripped for the combat (however bestial and blackguard-looking their countenances may be), the clearness and beauty of their skin testify, that by skilful physical discipline, a great deal more may be made of that human hide than is usually made of it. Then if you wish to know what may be made of the human muscles as regards rapid dexterity, look at the Wizard of the North or at an Indian Juggler. I am very far indeed from saying or thinking that this peculiar pre-eminence is worth the pains it must cost to acquire it. Not that I have a word to say against the man who maintains his children by bringing some one



faculty of the body to absolute perfection. I am ready even to admit that it is a very right and fit thing that one man in five or six millions should devote his life to showing the very utmost that can be made of the human frame, or the human muscular system as a whole. It is fit that a rare man here and there should cultivate some accomplishment to a perfection that looks magical just as it is fit that a man here and there should live in a house that cost a million of pounds to build, and round which a wide tract of country shows what might be made of trees and fields where unlimited wealth and exquisite taste have done their best to improve nature to the fairest forms of which it is capable. But even if it were possible, it would not be desirable that all human beings should live in dwellings like Hamilton Palace or Arundel Castle; and it would serve no good end at all—certainly no end worth the cost—to have all educated men as muscular as Tom Sayers, or swift of hand as Robert Houdin. Practical efficiency is wanted for the business of this life, not absolute perfection.—*Frazer's Magazine.*

**A GOOD SMOKEHOUSE.**—We lately observed a well-planned smokehouse on the premises of a good farmer, worthy of a brief description. It was about six feet square, the lower half built of brick, furnished with an iron-lined door, and serving as an ash-house, and place for the fire. The upper part about four feet high, besides the ascent of the roof, was made of wood. It was separated from the lower part by scantling joints, a space of two or three inches between them, through which smoke and air could freely pass, but sufficient to catch any ham that might accidentally fall, and thus save it from the fire. The upper part as well as the lower, was entered by a door from the outside; this upper door may be kept locked, except when admitting or withdrawing hams; but the lower may be left unlocked, for the hired men to build fires, without any danger of the contents above being stolen, as the thief cannot pass through the openings between the joists.—*Country Gentleman.*

**SEA-BIRDS.**—The question is often asked, where do sea-birds obtain fresh water to slake their thirst? but we have never seen it satisfactorily answered till a few days ago. An old skipper, with whom we were conversing on the subject, said that he had frequently seen these birds at sea, far from any land that could furnish them with water, hovering round and under a storm cloud, clattering like ducks on a hot day at a pond, and drinking in the drops of rain as they fell. They will smell a rain squall a hundred miles, or even further off, and send for it with almost incredible swiftness. How long sea-birds can exist without water is only a matter of conjecture; but probably their powers of enduring thirst are increased by habit, and possibly they can go without for many days, if not for several weeks.—*Wilson.*

**NOTES ON RAVEN STORIES.**—It is a curious fact that a bird of so grave and sedate a demeanour should so affect inns and taverns. Whether it is that, being burdened with an evil conscience, he seeks there to drown it—not by indulging in intoxicating liquor, but rather in the row and riot consequent on its absorption by morials; or whether, being of a cynical turn, he delights in the contemplation of folks going the same thing from the most opposite reasons—drinking, because they are jolly, and because they are miserable, because they can afford it, and because they are so wretchedly poor—is more than I can say. I only know that of the few remaining ravens in London, at least one half are attached to public-houses, and nearly always to such houses as adhere to the old custom of sign-posts and water-troughs. Some years ago there was attached to a tavern at Stoke Newington a raven, whose great antipathy was grey or white horses. Brown, black or roan horses might halt outside, and welcome; but so sure as one of the detested colour drew up and appeared at the water-trough, Peg was on the alert. She would perch on the edge of the trough and abuse the poor animal in the very choicest Billingsgate, or “gee, whoa!” in exact imitation of a carter, and start it off. I should have thought all this was done for pure fun and love of mischief, but for an incident related to me by the landlord, and which at once proved that the bird was actuated by sheer malice. It happened one day that Peg was particularly curious respecting a tobacco box belonging to a sailor who was drinking ale in the parlour. Presently the sailor took a “quid” from the box, and put it in his mouth. Peg watched the operation with great attention, and observing that the sailor relished the disgusting mouthful, as soon as his back was turned she darted at the box and swallowed its contents at a gulp. The consequence was that for the remainder of that day and the next she was very ill indeed. A few days after an unlucky white horse, attached to a hay-cart, arrived at the house in question, and was drawn up to the trough to drink, and the raven instantly began her persecution. The white horse, however, had met Peg several times before, and had learned to treat her impudence with indifference. Finding abuse and assault of no avail, Peg turned into the house, and, finding some men smoking in the taproom, she caught up a paper of tobacco from the table, flew to the edge of the trough with it, and deliberately dropped it into the horse’s nose-bag.—*Home Pets, (Oct.)*

**THE NEW ARTESIAN WELL NEAR PARIS.**—The sinking of the artesian well at Paris cost £40,000. The result is, however, beyond all previous calculation. Instead of the 12,000, no less than 75,000 cubic feet spring up every twenty-four hours—the well at Grenelle giving only 3,000 at the utmost, now reduced to 2,200 cubic feet.

The Passy bore is 60 inches in diameter, and quite a river of pure water flows from it, equal in quantity to one thirty-fifth of the average flow of the Seine! With a few such wells all Paris could be supplied, and at a trifling cost compared with that of the gigantic schemes for bringing water from Champagne and other quarters. The temperature is high—80 degrees—and in this state it can be made very useful for many purposes, though for drinking it must be cooled.

**WORKS OF HUMAN LABOUR.**—Nineveh was 15 miles long, 8 wide, and forty miles round, with a wall 100 feet high, and thick enough for three chariots abreast. Babylon was 50 miles within the walls, which were 75 feet thick and 100 high, with a 100 brazen gates. The temple of Dagon, Ephesus, was 420 feet to the support of the roof; it was a hundred years in building. The largest of the pyramids is 481 feet high, and 653 on the sides; its base covers 11 acres. The stones are about 60 feet in length, and the layers are 208. It employed 330,000 men in building. The labyrinth in Egypt contains 300 chambers and 12 halls. Thebes, in Egypt, presents ruins 27 miles round, and 100 gates. Carthage was 29 round. Athens was 25 miles round, and contained 359,000 citizens and 400,000 slaves. The temple at Delphos was so rich in donations, that it was plundered of \$50,000,000, and Nero carried away from it 200 statues. The walls of Rome were 13 miles round.

**SLEEP VS. INSANITY.**—In an article on sleep in a late number of the *Edinburgh*, Dr. Cornhill, of Philadelphia, says:—The most frequent and immediate cause of insanity, and one of the most important to guard against, is the want of sleep. Indeed so rarely do we see a recent case of insanity that is not preceded by want of sleep, that it is regarded as almost a sure precursor of mental derangement. Notwithstanding strong hereditary predisposition, ill health, loss of kindred or property, insanity rarely results, unless the exciting causes are such as to produce a loss of sleep. A mother loses her only child; a merchant his fortune; the politician, the scholar, the enthusiast may have their minds powerfully excited and disturbed; yet, if they sleep well, they will not become insane. No advice is so good, therefore, to those who have recovered from an attack, or to those who are in delicate health, as that of securing, by all means, sound regular, and refreshing sleep. "There is no fact," says Dr. Spenser, "more clearly established in the physiology of man than this, that the brain expands its energies and itself during the hours of wakefulness, and that these are recuperated during sleep; if the recuperation does not equal the expenditure, the brain withers—this is insanity. Thus it is that in early English history, persons who were condemned to death by being prevented from sleeping, always died raving maniacs; thus it is, also, that those who starve to death become insane; the brain is not nourished, and they cannot sleep."

**USEFUL MEDICAL HINTS.**—We find the following remarks (by the editor) in the *Cincinnati*, a scientific and agricultural journal published at Cincinnati, Ohio:—If a person swallows any poison whatever, or has fallen into any convulsions from having overloaded the stomach, an instant and easy remedy is a teaspoonful of common salt and as much ground mustard, stirred rapidly in a teacup of water, warm or cold, and swallowed instantly. It is scarcely down before it begins to come up, bringing with it the contents of the stomach; and lest there be any amount of poison, however small, let the white of an egg or teacup full of strong coffee be swallowed as soon as the stomach is quiet; because these nullify many virulent poisons. In case of scalding or burning the body, immersing the part in cold water gives entire relief, as instantaneously as the lightning. Meanwhile, get some common dry flour, and apply it an inch or two thick on the injured part the moment it emerges from the water, and keep sprinkling on the flour through anything like a pepper-box cover, so as to put it on evenly. Do nothing else; drink nothing but water; eat nothing until improvement commences, except some dry bread softened in very weak tea of some kind. Cures of frightful burnings have been performed in this way, as wonderful as they are painless. We once saved the life of an infant which had been inadvertently drugged with laudanum, which was fast sinking into the sleep which has no waking, by giving it strong coffee, cleared with the white of an egg—a teaspoonful every five minutes—until it ceased to be drowsy.

**HOW TO TREAT THE BITE OF A DOG.**—Dr. Stephen Ware, of Boston, in his testimony of a recent case which grew out of the injuries from the bite of a dog, furnished the following valuable advice:—In the case of a bite by a dog, where the teeth of the animal penetrated the flesh, whether the dog was known to be mad or not, he should use the same precautions. He would wash the wound with warm water, extract all the virus possible by sucking the wound with his lips, and then canterize it deeply with the caustic most readily obtained, but should use potash if it could be procured at once. The time in which the effects of the bite of a mad dog would be seen, varied from two to three days to as many years, but if no effects were felt after two or three months, as a general thing the patient might consider himself safe. Bites made through clothing are seldom productive of much harm, as even if the dog is mad the clothing absorbs the virus before the teeth reach the flesh. Most of all the fatal cases are where the person was bitten on some naked part. Concerning the possibility of a cure in a real case of hydrophobia nothing was said.

**WATER TO DRINK FOR SOLDIERS.**—Mr. Henry Marshall, who was for a long period Deputy



Inspector of Hospitals, in the British Army, says:—"By the daily custom of imbibing spirituous potations a new want is created, intemperance is established as a habit, and frequent intoxication is the consequence. The wretched drunkard must now have a large supply of liquor in the morning to recover from the effects of the quantity drank on the previous night. He perhaps has neither money nor credit, and his clothes are then sold at a small portion of their value. Some do not stop here; for, after having sold all their clothes, they will rob their comrades and with the proceeds of their dishonesty provide the means of intoxication. Confinement follows upon confinement, court-martial upon court-martial, and punishment upon punishment, until the worn out wretch dies in hospital of the 'horrors,' fever or dysentery; or if he should for a time resist the fatal attacks of disease, his constitution becomes broken down by the combined influence of the poison of spirits, an exhausting climate and repeated attacks of illness, so that, in a few years, he is found unfit for further service in India."

The personal experience of Mr. Marshall was decidedly in favor of the superior sanitary effects of water drinking, in hot climates. He says:—"I have myself marched on foot with troops on actual service, in a tropical climate, where the mean temperature is considerably higher than that of Jamaica, without any other beverage than water, and occasionally a cup of coffee. So far from being calculated to assist the human body in enduring fatigue, I have always found that the strongest liquors were the most enervating; and this in whatever quantity they were consumed, for the daily use of spirits is an evil which retains its pernicious character through all its gradations. Indulged in at all, it can produce nothing better than a diluted or mitigated kind of mischief." Dr. Robert Jackson, who was at one time at the head of the medical staff in the West Indies, expresses his opinion that an English soldier, aided by temperance, may be rendered capable of going through the severest military duty in the hottest islands in the West Indies.

Whiskey was unknown among the iron soldiers of Rome, who were the conquerors of the world. Water was their common drink, sometimes modified by weak sour wine, almost resembling vinegar.

**RULES FOR READING.**—Read the best books which wise and sensible persons advise, and study them with reflection and examination. Read with a firm determination to make use of all you read. Do not, by reading, neglect a more immediate or more important duty. Do not read with a view to make a display of your reading. Do not read too much at a time. Reflect upon what you read, and let it be moderately enjoyed and well digested.

**THE BASHFUL MAN.**—Washington Irving, at a party in England, once told the following story of a bashful friend of his, who, being asked to a dinner-party, sat down to the table next to the hostess in a great state of excitement, owing to his reclusive life. A few glasses of wine, mounting to his brain, completed his confusion, and dissipated the small remains of his presence of mind. Casting his eyes down, he saw on his lap some white linen. "My heavens!" thought he, "that's my shirt protruding at my waist-band." He immediately commenced to tuck in the offending portion of his dress; but the more he tucked in, the more there seemed to remain; at last he made a desperate effort, when a sudden crash aroused him, and screams from the company brought him to his senses. He had been all the time stuffing the table-cloth into his breeches, and the last attempt had swept everything clean off the table. Thus our bashful friend annexed a table cloth, thinking it was the tail of his own shirt.

### Editorial Notices, &c.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES OF UPPER CANADA: TORONTO.

The first number of Vol. 2 has just come to hand of this useful periodical, and its contents contain much to interest not only the mechanic and manufacturer, but also the general reader. In a young country like Canada, to rouse a spirit of energy and emulation in relation to arts and manufactures, must always be a slow and sometimes difficult work; and this is felt to be more particularly the case at the commencement and during the early stages of such undertakings. We are glad, therefore to find that the exertions of our Board of Arts and Manufactures have already been attended by such an amount of success as to encourage them to bring out their Journal for the current year in an enlarged and improved form, without increasing the price. The present number indicates much care and skill in preparing and editing the various subjects of which it treats, some of which are well illustrated by appropriate wood cuts. Its "getting up," as well as its scientific and literary matter are alike creditable to all concerned in its production. We will only add, that to single subscribers the yearly subscription is \$1; to clubs of ten or

more 75 cents; but members of Mechanics' Institutions, and also those of *Agricultural Societies*, can procure the work for the very small sum of 50 cents a year! Communications should be addressed to W. Edwards, Esq., Secretary of the Board of Arts and Manufactures, Toronto.

THE GARDENERS' MONTHLY: Edited by Thos. Meehan; Philadelphia, January 7, 1862.

This excellent gardening periodical has entered on its fourth year, with a constant tendency to improvement, so that it may now be considered as being permanently established. All subjects connected with Horticulture, in its various departments, the management of orchards, &c., are treated in its pages with a fullness and practical skill that must be highly acceptable to all who are in any way interested in these important and pleasing pursuits. We shall be happy to know that the *Gardeners' Monthly* is being increasingly circulated in every county and township in the Province. In this manner the taste and domestic comforts of the people would most surely be raised and increased. A good vegetable garden and orchard are among the indispensables to the enjoyments of a country life; and the cultivation of a few flowers, and the proper grouping of a few shrubs and trees around a country home, very much tend to increase its beauty and attractiveness. Mr. Fleming, Seedsman and Florist, of this city, will supply subscribers with this interesting and useful work for one dollar a year, a sum extraordinarily low, when its execution and the character of its papers are taken into consideration.

THE RURAL ANNUAL AND HORTICULTURAL DIRECTORY, for the year 1862: Rochester, N. Y., Joseph Harris.

This is the seventh annual publication of this very useful and popular Annual, the high character of which is fully sustained by the present volume. It is, as several of our readers are aware, published by Mr. Joseph Harris, at the office of the *Genesee Farmer*, at Rochester, in the state of New York, from whence it can be obtained by mail, by remitting the price, only 25 cents! This small sum will appear extraordinary when it is considered that the work is very neatly printed, and illustrated by numerous wood cuts. Publications of this nature cannot fail to ensure a highly beneficial influence on the

practice of agriculture, and the minds of all that are in any way engaged in country pursuits.

Among the contents of this volume we notice articles on the culture of Apples, Pears, Peaches, Plums, Grapes, etc., with a list of good varieties; also of Strawberries, Raspberries, Currants, etc.; on Annuals and their Culture; on the Manufacture of Domestic Wines; on the Cultivation of Wheat, Barley, Oats, Rye, and Indian Corn; on Cutting Potatoes for Planting; on Harrowing Potatoes; Chinese Hogs; English Mutton Sheep; Making Hay; Covering Grass Land with Straw; Culture of Figs; on Poultry; on the Culture of the Peach in the Middle States; Fruit and Malaria; Protecting Plants from Frost; Summer Pruning Apples; Rules for Arranging Ornamental Grounds; Fire-proof Wash for Roofs, etc.; on Cider-Making; Seeding with Clover among Corn; to Kill Canada Thistles; Amount of Roots from Clover and Grasses; to Destroy Insects, the Poultry Mildew; Trimming Osage Orange Hedges; Cultivation of the White Bean; Moss on Roofs; Whitewash; a Novel Ice-House; Application of Manure; Toads and Bees; on the Cultivation of Dwarf and Standard Pears; Mulching the Currant; Mildew on the Grape; Spireas and their Culture; Cold Graperies; When to Gather Grapes; Low-Headed Trees; the Delaware Grape; Strawberries; Aphides on trees; Covering Grape Vines in Winter; Aerating the soil; Warts on Cattle; Cut Worm and Corn Grub Killer; Treatment of Milk Cows, etc., etc.

TO AGENTS AND SUBSCRIBERS.—We beg to remind officers of Agricultural Societies and other gentlemen who are in the habit of obtaining subscriptions for this Journal, as well as our readers generally, that it is our invariable practice to stop all papers as soon as the term for which the subscription has been paid has expired. The paper is not again forwarded till the order has been renewed and the amount remitted. Agents will therefore please give this explanation to any subscribers of last year who may not understand the reason of their not receiving our journal since the commencement of the new year. We have already a large proportion of last year's subscribers on our books again for this year, and we shall be happy to receive the whole, with any number in addition, as soon as they please to forward their orders.



## BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,  
Toronto, 1861. Secretary.

International Exhibition, London,  
1862.

THE Commissioners for Canada at the INTERNATIONAL EXHIBITION of 1862, give notice to all parties desirous of exhibiting Canadian products, whether application has been already made for the exhibition of the same or not, that such articles may be sent in for examination and approval to the following places, at any time between the TENTH DAY of FEBRUARY next, and the undermentioned dates, viz:—

IN CANADA WEST.—London, 18th February; Hamilton, 20th February; Toronto, 22nd February; Kingston, 25th February, and Ottawa, 28th February.

IN CANADA EAST.—Quebec, 14th February; Three Rivers, 18th February; St. Hyacinthe, 22nd February; Sherbrooke, 25th February next; and Montreal, 3rd and 4th March next.

Articles will be received and stored at the Depots of the Grand Trunk Railway Company at London, Toronto, Kingston, Quebec, Point Levi, Sherbrooke and St. Hyacinthe.

The Commissioners will begin their examinations at 10 o'clock, A. M., of each day named.

Intending exhibitors must deliver the articles for exhibition at the above named places, free of charge. Should they not be approved, the Grand Trunk Railway will return them free of charge, to any depot on their line from which they have been sent.

Parties sending in Grain or Woods are requested to transmit a certificate, stating the species and varieties, and where grown. Woods should be sent of the usual dimensions for commerce, and Her Majesty's Commissioners have expressed a desire that they be shown in planks 4 inches thick, showing the sap on both sides, or in 4 inch scantling, and accompanied, wherever practicable, by twigs with leaves or flowers.

Parties desirous of further information, may apply, concerning Minerals and Specimens of Economic Geology, to Sir W. E. Logan, Montreal; concerning products of the Forests and Waters, to Dr. Tache, Quebec, or Dr. Hurlburt, Hamilton; concerning Agricultural produce, to Hon. L. V. Sicotte, St. Hyacinthe, and Col. Thomson, Toronto; concerning articles of Canadian Manufacture, to Dr. Beatty, Cobourg, or to the Secretary, Montreal, to whom also, communications on all other business of the Commission are to be addressed.

R. CHAMBERLIN, Com'r, Secretary.  
Montreal, December 12, 1861.

## Notice of Co-Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

## NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada, will carry on the above business, wholesale and Retail, at 126 Yonge st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

## FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several *pure Durham bull calves* to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the *well known DUCHESS tribe*, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—First come, first served.

Waterdown, Nov. 14, 1861.

4-t.

## THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

tf.

JOHN SNELL,  
Edmonton, P. O., C. W.

## VETERINARY SURGEON.

ANDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

**FOR SALE.**

**A FEW PURE-BRED SOUTH-DOWN RAMS**  
and Ewe Lambs, from

**IMPORTED STOCK,**

Selected from the Best Flock-dealers in Dorset,  
Wilts, and Hants.

The Subscriber will Warrant these Lambs to  
produce as much Wool and Mutton, and of  
equal Quality, as those of Jonas Webb, or any  
other Flock of the same kind and number in  
England.

JOHN SPENCER,  
Brooklin, Post Office,

Oct. 12th, 1861. Ontario County C. W.

**AYRSHIRE BULL FOR SALE.**

**MR.** Denison, of Dover Court, offers for Sale  
a thorough bred Ayrshire Bull, bred by  
the celebrated Ayrshire breeder, John Dodd,  
Esq., of Montreal. The bull is 3 years old, and  
can be delivered at or after the Show at Lon-  
don, in September.

Toronto, Aug., 1861.

**\* THE****JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,****FOR UPPER CANADA,**

Is Published on the first of every Month.

**A**T \$1 per annum for single copies, or to clubs  
of ten or more at 75 cents. per copy; to  
members of Mechanics' Institutes, and of Liter-  
ary, Scientific, and Agricultural Societies,  
through their Secretary or other officer, 50 cents  
per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures  
for Upper Canada, by W. C. CHEWETT & Co.,  
King Street East, Toronto.

**FOR SALE.**

**A** LOT of thorough bred Essex Pigs,—bred  
from recently imported 1st prize animals  
and who have this season taken premiums at  
both Township, County, and Provincial Exhi-  
bition.

JAMES COWAN.

Clochemhor, Galt P. O., Oct. 19, 1861.

**Contents of this Number.**

|                                             | PAGE. |
|---------------------------------------------|-------|
| Land Drainage.....                          | 33    |
| Growth of Red Clover with different manures | 34    |
| Care and Feed of Live Stock.....            | 35    |
| Adulteration of Seeds.....                  | 36    |
| Mean Temperature of the year 1861.....      | 38    |
| Leached Ashes as Manure.....                | 39    |
| Correspondents Wanted.....                  | 39    |
| Patents of Invention.....                   | 40    |
| On Feeding Stock.....                       | 40    |

**AGRICULTURAL INTELLIGENCE :**

|                                          |    |
|------------------------------------------|----|
| Sorghum Sugar.....                       | 44 |
| Advantages of Crushing Oats.....         | 44 |
| Importation of Animals for Stock.....    | 44 |
| Effect of Cold on Fattening Animals..... | 45 |

**HORTICULTURAL :**

|                                           |    |
|-------------------------------------------|----|
| Dwarf Apple Trees.....                    | 45 |
| Cultivation of Plums.....                 | 45 |
| Fruits, Flowers and Seeds of the West.... | 46 |

**THE DAIRY :**

|                                        |    |
|----------------------------------------|----|
| Dairy Management, Butter, Cheese,..... | 46 |
|----------------------------------------|----|

**DOMESTIC :**

|                             |    |
|-----------------------------|----|
| Housekeepers' Recipes.....  | 50 |
| Preparation of Chicory..... | 50 |

**THE POULTRY YARD :**

|                                        |    |
|----------------------------------------|----|
| Profitable Poultry Keeping.....        | 51 |
| Feeding and Management of Poultry..... | 51 |

**THE APIARY :**

|                                |    |
|--------------------------------|----|
| On the Management of Bees..... | 53 |
|--------------------------------|----|

**VETERINARY :**

|                                  |    |
|----------------------------------|----|
| Warts on Cattle.....             | 55 |
| The Cattle Disease in Wales..... | 53 |

**MISCELLANEOUS :**

|                                                                                                                                       |     |
|---------------------------------------------------------------------------------------------------------------------------------------|-----|
| The Domestic Tyrant, The Hippopotamus.                                                                                                | 57  |
| The Flax and Linen Trade of Ireland,<br>Cows, vs. Horses, An easy way to dissolve<br>bones, Physical strength and dexterity..         | 58  |
| A Good Smoke-house, Sea-Birds, Notes on<br>Raven Stories, The new Artesian Well<br>near Paris.....                                    | 59  |
| Works of human labour, Sleep vs. Insan-<br>ity, Useful medical hints, how to treat the<br>bite of a dog, Water the drink for Soldiers | 60  |
| Rules for Reading.....                                                                                                                | 61  |
| EDITORIAL NOTICES, &c.....                                                                                                            | 61* |

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**s published in Toronto on the 1st and 16th of  
each month.

**Subscription**—Half a dollar per annum for  
Single copies; Eleven copies for Five Dollars.  
Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor: Buckland, of University  
College, Toronto, and Hugh C. Thomson, Secre-  
tary of the Board of Agriculture, Toronto, to  
whom all orders and remittances are to be ad-  
dressed.

Printed at the "Guardian" Steam Press, King  
Street East, Toronto.



THE

# Canadian Agriculturist,

OR

## JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA.

VOL. XIV.

TORONTO, FEBRUARY 1, 1862.

No. 3.

### The Early History of Agricultural Societies in Canada.

EDITORS OF THE AGRICULTURIST,—GENTLEMEN,—For many years I have wished to gather information respecting the early history of Agricultural Societies in this Province, from the gentlemen who first established them, with the view of preparing a little history therefrom some day at my leisure.

The first parliamentary law passed for the organization of Agricultural Societies was in the year 1830, and, immediately afterwards these valuable societies began to spring up and flourish in many of the older districts of the province. Before the passage of the law for their establishment some districts were partially organized, the Home District being among the number, and, if I mistake not, there was also a Society at Kingston, and another at Cobourg, started previous to the Agricultural Bill. Of these, we have no report as far as I can learn, and never shall have, unless provided for us by the early promoters of them, and these, I fear, are not very numerous at the present day. I can, however, name a few gentlemen whose connection with these societies, and doubtless the proposers of them, are still living, and could furnish valuable information. I refer to Colonel E. W. Thomson and W. B. Jarvis, Esq., of the old Home District; Col. J. B. Marks, of Frontenac, Lennox and Addington, and the Hon. Henry Ruttan, of Northumberland, Durham, &c. &c. If these gentlemen would take the trouble to try back in their storehouses of memory, and furnish such a history as they only can furnish of the societies named above, or any others, giving the objects for which they established them, and some of the names

of their colleagues, and earliest importers of stock, &c., with any documents they may have, such as By-laws, Show Bills, or Prize lists, they would confer a favour. Of course all the societies organized under the Statute can be traced by the reports they furnished to Parliament, in accordance with the law.

With this little history, brought up to the year 1847, when the law was passed to incorporate the Agricultural Association, which was commenced the year previous, we should have all that may ever be expected, and who knows how much it may be prized by our descendants, and especially those descended from the fathers of Agricultural Societies in Upper Canada.

Yours, &c.,

RICHARD L. DENISON,

Dover Court, Feb., 1862.

### Elodea Canadensis.

TO THE EDITOR OF THE CANADIAN AGRICULTURIST,—SIR—I am not prepared to answer the question you proposed (page 584), "Is the *Elodea Canadensis* known in Canada?" But if it is not, *unde derivatum*? whence its name? Gray mentions but two varieties, *Virginica* and *petiolata*—the latter from New Jersey, southward and westward. He describes, however, a member of another family, the *frog's bit*, (the *Elodea*, he says, is a *St. John's wort*) the *Anacharis water-weed*, which may perhaps be the plant in question. At all events the name is more suitable to so mischievous a weed as the one described in the article that has elicited these remarks, a weed altogether destitute of charms. It would seem that neither of these plants is intended to flourish in rivers possessing a rapid current. They are *marsh* or *pond* plants, and rejoice in such waters as are slug-

gish, if not stagnant, and unobstructed by boats, or drift-wood, or other extraneous matters calculated to injure their very fragile stalks.

Paxon gives us only two species of *Elodea*, which, by-the-bye, he terms "interesting aquatics," *Guianensis*, from Guiana, and *pulchella*, from the East Indies. He makes no allusion to a Canadian species. He assigns the *Elodea* to the *Frog's-bit* family.

Gray and Paxton are both recognized authorities; so after all I fear I have made "confusion worse confounded."

I am, Sir, your obedient Servant,

V. C.

Peterboro', C.W.. Nov. 21, 1861.

[The above communication should have appeared several weeks ago, but got accidentally mislaid, and was not discovered again till a few days back,—Ed.]

### International Exhibition, 1862.

The subjoined official notice has been issued by the commissioners:—Her Majesty's Commissioners have adapted the following regulations with respect to the admission of visitors to the exhibition:

1. The exhibition will open, as previously announced, on Thursday, the 1st of May, and will be open daily (Sundays excepted) during such hours as the commissioners shall, from time to time, appoint.

2. The Royal Horticultural Society having arranged a new entrance to their gardens from Kensington-road, the commissioners have agreed with the council of the Society to establish an entrance to the Exhibition from the Gardens, and to issue a joint ticket giving the owner the privilege of admission both to the gardens and to the Exhibition on all occasions when they are open to visitors, including the flower shows and *fetes* held in the Gardens, up to the 18th of October, 1862.

3. There will, therefore, be four principal entrances for visitors:—(1.) From the Horticultural Gardens for the owners of the joint tickets, fellows of the society, and other visitors to the garden. (2.) In Cromwell-road. (3.) In Prince Albert's-road. (4.) In Exhibition-road.

4. The regulations necessary for preventing obstructions and danger at the several entrances will be issued prior to the opening.

5. Admittance to the Exhibition will be given only to the owners of season tickets, and to visitors paying at the doors.

6. There will be two classes of season tickets; the 1st, price £3 3s, will entitle the owner to admission to the opening and all other ceremonials, as well as at all times when the building is open to the public; the 2nd, price £5 5s,

will confer the same privileges of admission to the exhibition, and will further entitle the owner to admission to the Gardens of the Royal Horticultural Society at South Kensington and Chiswick (including the flower show and *fetes* at these gardens) during the continuance of the Exhibition.

7. On the 1st of May, on the occasion of the opening ceremonial, the admissions will be restricted to owners of season tickets.

8. On the 2nd and 3rd of May the price of admission will be £1 for each person; and the commissioners reserve to themselves the power of appointing three other days, when the same charge will be made.

9. From the 5th to the 17th of May, 5s.

10. From the 19th to the 31st of May, 2s 6d, except on one day in each week, when the charge will be 5s.

11. After the 31st of May the price of admission on four days each week will be 1s.

12. Season tickets are now for sale, between the hours of 10 and 5 daily, at the offices of her Majesty's Commissioners, No. 454 West Strand, London, W. C.

13. Application through the post (stating Christian name and surname) must be addressed to the secretary, and must be accompanied by Post-office orders, payable to J. J. Mayo, Esq., at the Post-office, Charing-cross.

14. No cheques or country notes will be received.

15. Cases for preserving the season tickets may be obtained at the office for 1s each.

### On Feeding Stock.

*Continued from Page 44.)*

It is difficult, among these conflicting statements, to decide as to what is to be considered the real effect of salt. But, fortunately, we possess a very remarkable series of experiments by Voit, whose object was to elucidate the general question of the influence of salt in the nutrition of animals, on which they throw a good deal of light. His experiments were made on the dog, which, from its small size and docility, is well fitted for the purpose. The dog used, for the experiments required, 1,500 grammes of flesh to maintain its weight. As soon as it was supplied with salt, it began to drink a larger quantity of water, and to secrete more urine, and the proportion was:—

|                      |              |
|----------------------|--------------|
| No salt, .....       | 935 grammes. |
| 5 Grammes daily..... | 948 "        |
| 10 " .....           | 1042 "       |
| 20 " .....           | 1284 "       |

It may be supposed that this increase is due to the larger quantity of water drunk; but this is not the case, for when the animal was not allowed to drink, it was nevertheless found that



the urine increased in just the same proportion, the quantities being:—

|                      |              |
|----------------------|--------------|
| No salt, .....       | 828 grammes. |
| 5 Grammes daily..... | 898 “        |
| 10 “ .....           | 987 “        |
| 20 “ .....           | 1124 “       |

The urine was not only increased, but it contained more of the peculiar principle of the urine called *urea*, the numbers being, in the course of the whole experiment:—

|                 |       |
|-----------------|-------|
| No salt .....   | 107.4 |
| 5 Grammes ..... | 109.5 |
| 10 “ .....      | 110.9 |
| 20 “ .....      | 112.8 |

The importance of this observation will be understood when it is borne in mind that the *urea* affords a measure of the quantity of the tissues disintegrated and excreted, and that the presence of a larger quantity than usual in the urine is a proof that an increase of food is necessary to maintain the true weight of the animal. Such was, in fact, found to be the case, and the dog fell off in weight when it got the salt with its food. These experiments, therefore, tend to confirm those of Boussingault, and show that salt does not cause the animal to make a better use of its food; on the contrary, the effect is in the opposite direction, so that in economical feeding more salt should not be used than is just sufficient for the requirements of the animal. On the other hand, it must not fall short of this quantity; and to secure a proportion, the nature of the food should be taken into account, so that if much straw, and more especially straw grown at a distance from the sea, is used, a small addition should be made to the food, but it should always be small, and it should not be given *ad libitum*, but in the smallest quantity consistent with fulfilling its object. On exactly the same principle as the addition of salt has been recommended, it has been proposed to employ phosphate of lime. That substance, as we all know, is an indispensable constituent of the animal body, and, besides, forming the larger part of the bones, is met with in almost all the other organs. It is a substance, also, in which the food is sometimes deficient, and it has been maintained that in most cases an additional quantity should be beneficial. There is no doubt that when it and other mineral constituents of the food are in too small quantity, the health suffers, and a remarkable instance of this is found among the experiments of Messrs. Lawes and Gilbert. They fed these swine for eight weeks on maize, a substance containing a very small quantity of mineral matters, and more especially of phosphates, and they began to suffer from swelling of the glands and other bad symptoms. They were then supplied with a mixture of 5lbs. wood ashes, 1lb salt, and  $\frac{1}{2}$  lb. of superphosphate, every fourteen days, and this nauseous mixture they greedily devoured and soon regained their health, while others

which did not get it died. Several series of experiments have been made in which phosphate of lime, in the form of extremely fine powder, has been added to the food of animals, and the results, as in the case of salt, have been exceedingly conflicting. Lehmann made one series, in which he obtained a favourable result. He gave exactly the same food to three young pigs, two of which got daily half an ounce of finely ground bone earth, and these, at the end of 259 days, weighed respectively 23, and 11 lbs. more than the third, which got none. In another experiment, made in Silesia, and also on swine, no perceptible difference existed between the two lots. In a third series, made by Von Barratta on lambs, bone meal was employed to the extent of half an ounce daily, and here the results were most unfavourable, for the lambs which got it weighed, at the end of 40 days, 31 lbs. less than those which got none. In this case, however, the effect may be due to the animal matter of the bone meal, which may not be suited to the herbivorous animal. A more minute and careful series of experiments on the influence of phosphate of lime on lambs has recently been made by Von Gohren, which lead to the conclusion that it does not affect their growth in any way, the weight of those receiving 120 grains daily being sensibly the same as that of those which had none. By comparative analysis, however, of the food and excretions, he has ascertained that a portion of the phosphate of lime was actually absorbed and employed within the system. Where no phosphate of lime was used, the excretions contained 3.5 grains of phosphoric acid less than the food, so that this was the quantity daily stored up in the system. But when bone earth was added to the food, 28.10 grains were retained daily. It thus appears that the phosphate of lime, like salt, has no effect in increasing the live weight of the animals to which it is given, or in causing them to make a better use of their food; but it is quite possible that where there is a deficiency in the phosphoric acid it may exert an important influence on the health of the animal during the early period of life, when the bone is chiefly formed, and hence its use may occasionally be advantageous.

The general conclusion to be drawn from all the experiments and observations now detailed is that whatever benefits may accrue to the health of the animal by the use of condiments, of which common salt may be taken as the type they are without effect on the quantity of nutritious matters assimilated; and salt, when used in considerable quantity, actually causes the expenditure of an extra quantity of food to produce the same increase in live weight. These facts are not unimportant in relation to a class of substances now commonly called “condimental foods,” which are very actively pressed upon the attention of the farmer, and are alleged to produce so great an economy of the ordinary

food as to justify the high price at which they are sold. It is worthy of notice that the grounds upon which these substances are offered have been somewhat changed. They were originally called "concentrated foods," a term clearly borrowed from that used in describing manures, and intended to lead to the belief that the nutritive elements of the plant food are found in a guano or superphosphate. This view of the matter is exceedingly specious and attractive, but a very little consideration suffices to show that it is entirely fallacious. A manure can be concentrated, because it contains many substances of little or no use to the plants. Thus it would be possible, though not practically economical, to take farm-yard manure containing about 75 per cent. of water, and by simply drying it, to concentrate four tons into one. It would be even possible to go still further, and to extract from it the ammonia, phosphoric acid, and other substances required by the plant, and so to reduce it to a still smaller bulk; but no such concentration is practicable with the food of animals. The two great kingdoms of organised beings are, no doubt, made up of exactly the same chemical elements, but the plant is able to take its food in the form of simple compounds, such as the ammonia, carbonic acid, &c., and from them to build up the most complex constituents of its frame. But animals possess no such power; their food must be supplied to them in the form of those complex and bulky compounds which the plant alone can produce, and which the animal only modifies to a slight extent in the process of assimilation. Hence it follows that it is only theoretically possible to concentrate the food of animals to a very limited extent, because the quantity of innutritious matters each of them contains is small, and it is *practically* impossible to do it at all, because there are no processes known by which the innutritious matters can be removed in such a manner as to leave the nutritive substances in a state in which they can be used as food. In the grains of the cereals the only absolutely innutritious substances are water and a small quantity of woody fibre, of which the latter cannot be extracted without entirely destroying the grain; and, though the former may be expelled by heat, it is rapidly reabsorbed from the air.

The food of an animal cannot therefore be concentrated, and the introduction of the word "condimental" instead of the "concentrated" food by the makers of some of these articles must be taken as a tacit admission that this view of the case cannot be defended. The fact is, that analysis at once shows that in these substances there has really been no concentration. A minute examination of a number of them recently made in the laboratory, which will appear in the forthcoming number of the "Transactions," has shown that there has been no attempt to concentrate in the sense in which that word is usually understood, for they all contain just as

much water and woody fibre as other vegetable substances, and are, in fact, mixtures of the most ordinary materials, consisting of Indian corn, rice, bean meal, ground carob beans, and other similar substances, along with small quantities of aromatic seeds, and in some instances a bitter substance, apparently genian. It is absurd to suppose that the contents of a small tin measure holding half a pint of these substances can be used to replace one half of the ordinary food of an ox or a horse, and their inventors, seeing that as these facts became known to the farmer their position would become untenable, have taken refuge behind the aromatics and bitters they contain, and have asserted that their effect is condimental, and that they act by promoting digestion and causing the animal to extract and assimilate a larger quantity of the nutritive matters of its ordinary food. They have obviously gone upon the commonly received opinion, which attributes to salt and similar substances this effect—a view which the facts I have already detailed by no means countenance. There is, in fact, not the slightest reason to suppose that the substances contained in these have any such effect. They consist, in addition to the grains already mentioned, chiefly of fecungrec and caraway seeds, and one of those I have examined contained so large a quantity of turmeric that it might almost be described as a curry powder. Nothing definite is known regarding the action of these substances on the system, there being no experiments such as those by which the effects of salt have been determined; and there is no evidence to support the view that they are capable of producing a more complete assimilation of the food, but every reason to believe the reverse. In fact, when a dispassionate view of the matter is taken, I think that it can scarcely be doubted that, if small quantities of caraway or other aromatic seeds were given to animals, and their weights carefully determined, it would be found that they are quite without effect. It must be noticed that there have been no attempts on the part of the "discoverers" to produce such accurate experiments in support of their views, although there have been plenty of general testimonials, such as every quack medicine can produce by the score, and abundance of vague declamation regarding their wonderful effects. The plain fact is, that science does not give the slightest support to the idea that these substances have any effect whatever; and in saying so, I am only stating an opinion in which all chemists will concur, and which has, indeed, been often stated before. Its accuracy has just as often been denied by the makers of these articles, but it has never been disproved, nor will that be possible until they can produce the precise results of trustworthy experimenters in support of their substances. But even admitting the accuracy of all the statements put forth by the makers of their food, there is another question which merits attention, and that is the



price at which they sold. I have already mentioned that they are composed chiefly of some of the more familiar foods mixed with a small quantity of aromatics. The exact proportion in which these latter substances exists in them cannot be accurately determined, but it is not large, and does not exceed 10 per cent. Indian corn, carob beans, &c., cost about £8 or £9 per ton, and fœcungiee and caraway seeds £20 to £25. A mixture of nine tons of the former, and one of the latter, should therefore be sold at £10 or £11 per ton, in place of £20 or £30, the price actually charged; so that if these goods do produce the alleged effect, the farmer is made to pay for them three times their intrinsic value. This fact is of itself a sufficient comment on what has been already stated, and the truth is that the "discoveries" of which the makers of these foods boast are confined to the art of extracting money from the pockets of the farmer.

The general conclusions to be drawn from what has now been said may be summed up in a very few words:—1st, Common salt, the most important condiment, has no effect in promoting the assimilation of the food, and, when used in *large* quantity, has rather a tendency to produce a waste of nutritive matters; 2nd, Both it and phosphate of lime, and probably other mineral substances, may exercise a beneficial effect on its health when the quantity existing in the food is less than the animal requires; 3rd, There is not the slightest reason to suppose that the so-called condimental foods produce any effect on the animal, as they consist only of ordinary grains mixed with small quantities of aromatic and bitter substances, which, so far as our present knowledge goes, do not in any way affect the nutrition of animals.

### Flax Culture.

As the question of Flax cultivation is now on the tapis, and as I am thoroughly convinced of its importance, both as regards the interests of the farmers as individuals and the Province as a nation, I beg to send you the following remarks.

I see by the Annual Report of the Directors of the North Oxford Agricultural Society, in last week's *Times*, that the Hon. G. Alexander and Mr. Penman have very liberally offered to give ten dollars each as a prize or prizes for the best samples of flax grown in the North Riding next year. With all due deference to those gentlemen, I would beg to suggest that the offering of prizes is not alone sufficient to insure the growth of such a quantity as would pay the interest on capital expended in the erection of a scutching mill. The majority of the farmers know little or nothing about the cultivation of the plant, and consequently will be unwilling to expend money and labour upon its growth, unless previously well assured of its proving remunerative. The surest way, in my opinion,

would be to form a Company with such a capital as would enable them, after erecting a house with machinery, to purchase flax seed, and by advertisements inform the farmers that they could have seed for any amount of land they would guarantee to sow; the Company taking their notes for the amount, redeemable by so much flax (of course at market price) at the end of the year. Such a system would enable the farmers to try the experiment without any outlay in hard cash, and that, with not a few, is a desideratum.

And a still greater inducement would be for such a Company to start Schenk's process of preparation, viz: to steam the flax for the purpose of separating the wood fibres, instead of steeping it in water; and to purchase the flax from the farmers as soon as pulled, at so much per ton for the raw material. This would save the farmers all the extra labour that would necessarily be incurred in the steeping, spreading, turning, trying, &c., and as the flax would come in about the busiest season, and the seasons in this country being so short, I believe the extra labour likely to be incurred would be the greatest drawback to its introduction here. As far as Schenk's system is concerned, I have seen it tested, and have no hesitation in saying that it would pay as a commercial speculation. Were a Company formed in the town or country they might get up machinery for the manufacture of flax through every process, from the raw material to the finest linen; rendering us in a few years entirely independent of the cotton of the Southern States.—J. W. M.—*Woodstock Times*.

### Products of the Hemp Plant—(*Cannabis Sativa*.)

The hemp plant is known chiefly in this country on account of the valuable fibre it affords, which is in such constant use in the manufacture of cord, ropes, &c. Although its fibre is of the greatest value to us, still its other products are equally valuable to the natives of tropical climates. For example, in the East it is cultivated entirely on account of its narcotic resin, which is spontaneously secreted in all warm climates. In cooler temperatures it is grown exclusively for the sake of its fibre, as in Russia, Prussia, Spain, Italy, &c. It grows wild in temperate Asia and in Northern India.

Hemp appears to have been known from a very remote period, the first mention of it being made in the first book of Herodotus (C.202) where he says: "The Scythians never washed any part of their bodies excepting their heads, and accordingly purified themselves with an intoxicating kind of smoke, which seems to be somewhat analogous to the smoke of tobacco. Having first washed and thoroughly cleansed their heads, they made a tent by stretching thick

woollen cloths over three fixed sticks in the ground and inclining towards each other. They next placed a vessel full of red hot stones in the centre of the tent, and crept round it, whilst the tent covering was kept very close and almost air-tight. They then threw hemp seed on the hot stones, and a smoke and steam soon arose, which was denser than the hottest vapour bath, and the intoxicated Scythians would cry and shout at the top of their voices, from the excitement and exhilaration produced by this overpowering process." It is mentioned again in another book of the same author, where he speaks of the Scythians having "a sort of hemp very much like flax," growing "both spontaneously and from cultivation," and of garments being made from it by the Heracians "very like linen." It is also spoken of by Pliny, who says the plant was well known to the Romans. Mention is also made by the writer of some medicinal properties reputed to belong to it. Thus we see that the plant was well known to the Greeks and Romans; but the Hebrews and Egyptians seem to have been unacquainted with it. At the present time it is grown to a great extent in Russia, wholly on account of its fibre, from which country we received, in 1860, 597,610 cwt. We also find it cultivated in some parts of India, Africa, and China, and also to a small extent in the United States and Canada. It grows well in England, and is cultivated largely in some counties, as Suffolk, Yorkshire, Lincolnshire, &c. The finest kind is obtained from Italy, though in small quantities; it is known as "Italian Garden Hemp," being raised by spade culture. This is sometimes eight or nine feet long, and is used for sail-cloth as well as for the finer kinds of cordage. The mode of preparing hemp much resembles that employed in the preparation of flax. Its values and uses are so well known that it is needless to mention them here. For its narcotic and resinous properties, it is exclusively cultivated in some parts of Africa and India. The value of the fibre of hemp grown in those countries seem greatly diminished, while the resin-producing properties of the plant appear much enhanced by growth in tropical climes. This resin, called in India "Churrus," is collected in the following curious manner: Men are clad in leather dresses, and sent into the hemp field, where they brush about amongst the plants in a furious manner. The soft resin, by this means, adheres to their dresses, and is afterwards scraped off and made into balls. The leathern costume is said to be dispensed with in Nepal, and the resin collected on the bare skins of the coolies. In Persia it is collected by submitting the plants to pressure between coarse cloths, which are subsequently scraped, and the resin melted in pots with the aid of warm water. A finer kind of this resin called waxen churrus, or "momea," is collected by hand. This fetches a high price, nearly double that of the ordinary kind, which usually

sells at from five to six rupees the seer. Churrus is of a dull greyish brown color, with little or no smell, and is usually met with in cakes from two to three inches long, somewhat in the shape of a lemon. It is used in medicine in India, and is reported to have been successfully employed in tetanus, though its application in this country, for the same purpose, has failed to give satisfactory results. Its intoxicating effects, as shown by Dr. O'Shaughnessy, are most remarkable.

Hemp enters into India commerce in other forms besides Churrus. Gunjah, or Ganjah, is found in the Calcutta bazaars, and is used chiefly for smoking. It consists of the plants themselves, with the leaves and inflorescence attached, and upon which the resin is left adhering. It is made up in bundles from three to four feet long, containing about twenty plants. These are flattened by pressure, and their colour is of a greenish brown, while there is present a heavy aromatic odour. It is smoked in a similar manner to tobacco, and it is said that its continued use brings on severe asthma. In Africa it is known as "Djamba," and is found in the markets packed in slips of palm leaf or husks of maize, generally about two feet long, tied at top and bottom, and at intervals of about an inch or inch and a half throughout the whole length of the case. When required for use, one of these divisions is cut through, which is sufficient for one pipe. The packages are sometimes smaller, and the "charges" not much larger than a marble. The "Hasheesh," or "Hasshisch," of the Arabs appears to differ from Gunjah in this peculiarity, that it is composed of the tops and other tender parts of the plants after the flowering period. They use it in a variety of ways other than smoking, for which purpose alone they have many modes of preparing it. They make it into an electuary, with the addition of dates, or figs and honey, and sometimes cloves, cinnamon, or musk, boiled in butter, or oil and water: the filtered product is used in pastry. "Bhang," "Sidhee," or "Subjee," is composed of the larger leaves and capsules with a very small quantity of resin. This, like Gunjah, is sold in the Indian bazaars. Its intoxicating properties are not so great; indeed, it is not applied to the same use; but being mixed with water and other additions, is formed into a drink called "Subzee," which is reported to be highly conducive to health. A stimulating infusion is prepared from the plant in Scinde, which is said to promote appetite, and is in great repute among the upper classes. The fruits of the hemp plant, which are usually known as hemp seed, are oleaginous and demulcent, but appear to be devoid of any narcotic principle. Their chief use is for feeding cage-birds. A serviceable oil is expressed from them which is used for mixing paints, burning in lamps, and also in the manufacture of soft soap.—*The Technologist for January.*



### Stock Feeding.

BY CUTHBERT W. JOHNSON, ESQ., F. R. S.

At a season when the feeding of stock is so generally engaging the attention of the readers of this magazine, we may usefully gather together, and carefully consider a few recent efforts to render that feeding more profitable. The health of our stock is a primary consideration. The common diseases of sheep when feeding off turnips is one very important question. The Highland Society of Scotland have lately awarded a premium to Mr. Hugh Borthwick, of Traquair-Knowes, for his essay on those too commonly fatal diseases—(*Trans. High. Society*, 1861, p. 127.) The disease of which he chiefly treats, are braxy, pluerio-pneumonia, louping-ill, and sturdy. The means of *prevention* of these diseases, which he considers the most successful, are for braxy, (which he thinks can be almost totally prevented by good management,) by putting the sheep on to the turnips gradually, two hours the first day, three the second, and so on for the course of a week; afterwards, if well sheltered, by closely confining them on the turnips, and supplying them with hay and straw, and in the importance of this change of food, every reader will concur. Another great object is, to have the roots consumed as free from dirt as possible; to this end the sheep should always be shifted to a fresh lot before the *shells* are eaten too bare, especially if the soil is damp. When the hoar frost is on the turnips, the flock ought not to be shifted until it is off the shaw. The surface of the frozen leaves of the turnips are then covered with so much frozen water as to be injurious to the sheep. Of pluerio-pneumonia, the conclusion to which Mr. Borthwick arrives is, that it is difficult to prevent this disease on sheep fed on turnips, especially in old ewes brought from pastoral districts. He is of opinion, that there is in some sheep an hereditary predisposition to this disease—a conclusion which he supports by several instances; he advises that when sheep are suspected of being tainted with it, they should have hay and a little bruised corn along with the turnips to prevent them from scouring. He adds, "I have tried to fatten sixteen sheep affected with pluerio-pneumonia within the last three years, on this kind of food, thirteen of which fed well, the other three died."

For louping-ill, or staggers, which frequently breaks out among hogs fed on turnips, the only preventive Mr. Borthwick deems effectual is, by keeping the turnips clean, giving the sheep a variety of food, hay if it can be had, and shelter at night, if the weather is stormy. He is of opinion that hogs had better be driven a mile every night to obtain shelter, than allowed to lie all night exposed to wind and rain.

The prevention of sturdy in sheep, Mr. Borthwick considers best accomplished by attention to their food; he tells us that on the farm of Tra-

quair-Knowes, when the hogs were kept on turnips alone, the cases of sturdy were great. One year especially, there were as many as five to the score affected; whereas, for the last two years, when hay, and rape cake were given along with the turnips, and shelter attended to, the cases of sturdy have not been more than one in a hundred. And yet, during these two years, the lambs were not better nursed than in other years, when sturdy prevailed to such an extent.

The ill-effects of the sheep being compelled to eat dirt with their turnips is hardly so well understood as is desirable. The dirt in some cases, as in braxy, accumulates to such an extent, that it may be taken out of the animals in handfuls. In acute cases of staggers, the clay, or dirt, sometimes mixed with wool, is found in the animal in round balls.

On the *prevention* of the rot in sheep, Professor Simonds not long since addressed the Council of the Royal Agricultural Society. He then told his hearers, "This year I had a number of sheep, and foresaw what was coming. I warned some of my neighbors, that we should have a great deal of rot this year, and I thought I would attempt, as far as my own sheep were concerned to save them. What did I do? The sheep were on wet meadows, nearly up to the fetlock joints every day, and nobody could avoid it. But at midsummer I began to feed the lambs and sheep with corn and nitrogenized food, giving them with every meal, a small quantity of salt. I continued that plan during the whole summer and autumn, and I have the satisfaction of saying that I do not believe at the present time that I have one of those lambs affected by the rot. I kept killing them week by week to watch their progress. And here I may observe that long-continued wet weather is very prejudicial to the sheep in another way. I refer now to the so called water rot. What was the state of the liver of these animals at midsummer? There were no flukes or anything of the kind, but the liver was streaked here and there with white lines, and generally pallid. This was for the want of nitrogenized matter. The bile-cells were blanched; the liver had become structurally diseased, and as such it was a good nidus for these entozoa to inhabit. Not only, however, did this simple treatment prevent the entozoa, but it brought about a healthy state of the liver; for in the course of a month or so, I found that the organ resumed its natural colour, and consistence; so that if we commence at midsummer, and continue this treatment through the entire dangerous period of a wet season, we may do a great deal in the prevention of the rot; and I may go further, and say, that even on the farms that have what are all called rotten pastures, on which the sheep are placed, the animals might be preserved to a very considerable extent, simply by giving nitrogenized food and salt, to destroy these creatures within the stomach, and prevent their final change, and alternating with

the salt a tonic invigorating agent, such as the sulphate of iron.

The result of all these researches on the diseases of sheep tend in the same direction, viz., that by attention to the comfort and food of the sheep, many diseases of the sheep are prevented; and no one with whom we have to do will doubt the advantage of thus preventing diseases, not only difficult to cure, but in animals commonly of too little value to repay the cost of medical attendance.

These remarks need not be confined to one variety of our domestic animals; our oxen and our horses, equally benefit by attention to their comfort and their food; and be it remembered, the cost of that food, given with the primary intention of keeping the stock free from disease, need not be regarded as an outlay for which there is no other return. The increase of their weight, the improved quality of their manure, must both be put against the cost of the purchased artificial food. This was lately very fairly put by Mr. Owen Wallis, of Overstone Grange, when addressing the members of the Central Farmer's Club, on the very important question of "the increased feeding of stock on pasture land, in spring, summer, and autumn." The means he suggests are—a better system of management of pastures, and to return to the six course rotation. He said, "I remember when the artificial grasses were very generally grazed for two years, and some for even three. There was therefore, one third of the light arable soils on farms so managed in pasture; and a much greater number of cattle and sheep were then kept upon them than there are at the present day. I have, on former occasions, when addressing the members of this Club, advocated a return to the six course rotation; and the increased value of both store and fat stock is an additional reason for its adoption. I have long been of opinion that more stock may be produced and more corn grown at a less cost by that system than by any other." Then he advises the use of oilcake when cattle are on the pastures, giving the stock the cakes in troughs in the open field, or, what is better, in sheds. As to the quantity given, Mr. Wallis adds, "I commence with 4lbs. per day, and finish with 6lbs., giving on an average 5lbs. per day. If this continued for six weeks, it will amount to 15 stones per head, which at about the average price of cake during the summer will not exceed 20s. We know from our experience that between a ripe bullock and one that is not well up to the mark, there is commonly a difference of more than double that sum in their respective prices, supposing they are equal in size. If, therefore, by an outlay of £1 we receive £2, the investment is a profitable one. But supposing it to be rather less than this, we must not forget the extra number of beasts that can be so fed on the same quantity of land; and the rent, rates, and taxes being the same in both cases, a further additional

profit is thus obtained, to say nothing of the rapid improvement of the soil."

Admitting then the advantage of giving extra food to our stock, another enquiry seems to follow closely upon that conclusion, viz., the comparative profit derivable from the use of different varieties of artificial food. Now on this very important question some carefully conducted experiments with different kinds of artificial food, both for cattle and sheep, are reported in the prize essay of Mr. W. Horn, of Brome Hall, in Norfolk (*Trans. High. Society*, 1861, p. 533). Six bullocks, bred from Ayrshire cows by a Shorthorn bull, in lots of two each, were fed in boxes from Dec. 10, 1859, to April 10, 1860. Five pounds of the artificial food were given to each bullock per day, with 99lbs. of roots, swedes, and mangolds, and 6lbs. of meadow hay; the result was as follows:—

| Lots.                            | LIVE WEIGHT. |          |      | GAIN. |
|----------------------------------|--------------|----------|------|-------|
|                                  | Dec. 10.     | Apr. 10. |      |       |
|                                  | Lbs.         | Lbs.     | Lbs. |       |
| 1. Bruised Linseed . . . .       | 2,716        | 3,434    | 718  |       |
| 2. Ground wheat & barley . . . . | 2,688        | 3,347    | 669  |       |
| 3. Oilcake . . . . .             | 2,754        | 3,391    | 637  |       |

At the same time, seven lots of Cotswold sheep, in pens of eight each, were fed under a well-ventilated shed—for the first month, on cut swedes thrice a day; the second, on swedes and mangolds; for the last two months, on mangolds alone, with 1lb. of meadow hay each per day, which they had throughout;  $3\frac{1}{4}$  lb. each sheep. The other pens, the same money value of the other food, oilcake being £10 10s. per ton, rapecake £6 10s, cotton-cake £6 10s., locust or carob beans £6 10s., peas £9 10s., linseed £13 bruised barley £8. It was found that each lot consumed nearly 120lbs. of roots and 8lbs. of meadow hay per day. The results of these experiments—which, says Mr. Horn, received every attention, in order to elicit the truth—were as follows:

| PEN.                        | LIVE WEIGHT. |          |      | GAIN. |
|-----------------------------|--------------|----------|------|-------|
|                             | Dec. 10.     | Apr. 10. |      |       |
|                             | Lbs.         | Lbs.     | Lbs. |       |
| 1. Rapecake . . . . .       | 876          | 1,235    | 359  |       |
| 2. Cotton-cake . . . . .    | 890          | 1,215    | 325  |       |
| 3. Oilcake . . . . .        | 884          | 1,297    | 413  |       |
| 4. Locusts . . . . .        | 860          | 1,222    | 362  |       |
| 5. Peas . . . . .           | 890          | 1,273    | 383  |       |
| 6. Linseed . . . . .        | 876          | 1,263    | 387  |       |
| 7. Bruised barley . . . . . | 894          | 1,231    | 347  |       |

Another mode of putting the result of far more lengthened and elaborate experiments on the same subject, is that of Mr. T. B. Lawes. (*Jour. Roy. Ag. Soc.*, vol. xxii., p. 214) that

|                                        |                                         | lb. oz. |  |
|----------------------------------------|-----------------------------------------|---------|--|
| Oxen consume, to produce 1lb. increase | in live weight, of the DRY substance of | 13 0    |  |
|                                        | the food consumed. . . . .              |         |  |
| Sheep, ditto, ditto . . . . .          |                                         | 9 2     |  |
| Pigs, ditto, ditto . . . . .           |                                         | 4 8     |  |



Thus, when liberally fed under cover, in proportion to a given live weight, within a given time, sheep will consume about  $1\frac{1}{4}$ , and pigs about  $2\frac{1}{4}$  times as much dry substance of their food (that is, of food entirely free from water) as oxen. Oxen should yield per week about 1, sheep about  $1\frac{3}{4}$ , and pigs 5 to 6 per cent. of their weight of increase.

These comparative results Mr. Lawes has illustrated by referring to the anatomical construction of the ox, the sheep, and the pig. He shows (*ibid.*, p. 215) that, in proportion to the weight of the body, oxen have considerably more of stomach and contents than sheep, and sheep considerably more than pigs. On the other hand, pigs have a considerably larger proportion of intestines and contents than sheep, and sheep more than oxen. But of stomachs and intestines, and their respective contents, taken together, oxen have a larger proportion than sheep, and sheep a larger proportion than pigs. Again, the dry substances of the mixed food of oxen contains a larger proportion of woody fibre than that of sheep, and that of sheep considerably more than that of pigs.

The results recorded in the last little table of Mr. Lawes, which I have just given, are quite in conformity with the facts he has stated with regard to the comparative structure of the different animals; and the comparative character of their respective foods. Thus, oxen, with the most bulky and (weight for weight) least nutritious food, have the largest proportion of stomach, and the least of intestinal surface for the absorption of nutritious matter. Now, oxen give also the least proportion of increase for a given amount of the dry substance of food. Sheep come next in order to oxen in these respects. The dry substance of the food of the pig is in much the largest proportion digestible, and available for assimilation and respiration. He has also much the largest proportion of intestinal surface for the absorption of nutritious matter; and he yields much the most increase for a given amount of a dry substance of food. Calculation further shows that that oxen expend in respiration the most, sheep considerably less, and pigs much the least of the dry substance of food, in proportion to a given amount of fattening increase yielded.

In calculating, then, the profit or loss derived from the use of artificial food, several branches of the inquiry must be taken into our consideration. It is generally understood by my readers that oilcake is not directly repaid by the increased market value of the animal; but then, as I have endeavoured to show, the greater health and the largely improved value of the manure must be included in the estimate. To this question Mr. P. N. Frere (*Jor. Roy. Ag. Soc.*, vol. xxi., p. 219), has devoted considerable attention, and the results of his experiments also confirm the ordinary conclusion, that stock do not pay, at least directly, for the artificial food bestowed upon them.

On the use of straw as food very considerable difference of opinion prevails. This question forms a portion of the valuable prize essay of Mr. N. Evershed, on the "Proper uses of Straw on a farm" (*ibid.*, vol. xxi., p. 158). He arrives, as a practical man, at certain conclusions, in which most of my readers will concur. He is of opinion that although it is a common plan, in grazing districts, where roots are scarce, to feed store cattle on about 30lbs. of straw and 3lbs. of bean-meal per day, yet that they do better with roots instead of meal, even where the supply of roots does not exceed half a hundred-weight per head daily. Cattle wintered on straw and meal, are certainly, as he remarks, apt to become "hide-bound," with staring coats.

The average amount of straw per acre Mr. Frere calculates to be  $2\frac{1}{2}$  tons, or 250 tons from 4 cwt. of straw enter into the composition of a ton of farm-yard manure, the remainder being 10 cwt. of water and 6 cwt. of excrement. The consumption of straw chaff by a cart-horse, he places at rather more than a ton per annum; cattle 21 cwt.; for the sheep on a farm of 400 acres he assigns 8 tons of straw chaff yearly. On an arable farm of 400 acres Mr. Evershed calculates that there is required for the yearly fodder of fifty head of large stock more than 50 tons of straw; for sheep, 8 tons; for storing roots, foundation of stacks, &c., about 5 tons—total 63 tons of straw.

It is now some little time since I first suggested the admixture with the chaff, cut turnips, and other ordinary food of sheep, certain more stimulating substances, and I did this from noting the natural habits of the wild sheep, when browsing on the mountains on which it is found, its love of elevated healthy pastures, its consumption of aromatic plants. On the Southdowns of England the same remark may be made. On these upland pastures we find the juniper, the wild thyme, and other indigenous aromatic plants, an the grazing ground of some of our noblest and most prosperous flocks.

It is not to such admixtures that we must attribute the asserted success of some of the new cattle foods? And might not the number of these aromatic, stimulating additions to the ordinary food of our stock be increased by other and cheaper native and foreign substances? Are there not to be obtained in newly explored African districts, for instance, the oil seeds of equatorial plants, that would very profitably warm the cold cut roots and the chaff on which we compel our flocks and our herds to feed? It is only by studying Nature's great book that we can ever hope to advance in this important direction. But what we have done in this way, how little of nature's teachings we have infused into our stock feeding, let our mountain sheep fleeing of turnips, and our pure-air loving oxen, fattening in a box over a deep bed of dung, give them unanswerable testimony.—*Farmer's Magazine.*

### Ergotised Wheat.

The following account of what followed the use of Spurred or Ergotised wheat is taken from that excellent work, *Sowerby's Grasses of Great Britain*; and will serve as a warning to every one, that all diseased grain, of whatever kind, is to be dreaded; and especially that it is a great mistake to imagine that the spurs of Rye are alone capable of producing fearful consequences:—

"Wheat is no less liable than Rye, and, indeed, all kinds of corn and cultivated vegetables, to disorders associated with the developement of minute species of fungi; and though ergot is less frequent in its attacks upon it than is the case with the last mentioned grain, several other equally destructive members of the class, known by the more familiar names of smut, rust, and mildew, seem always to avail themselves of every opportunity, that weakness engendered by adverse seasons or circumstances presents. Straw, foliage, husk, and grain afford in turn a subject for their insidious depredations, which are always more or less injurious, not to the quantity alone or the crop, but to its nutritive and healthful quality. Instances of this deterioration are shown in the analysis of our agricultural chemists, as in that of blighted Wheat, grown in 1804, by Sir H. Davy, which presented the average quantity of 955 parts of nutritive matter in the 1000 reduced to 650, while a sample of mildewed wheat, in 1806, yielded only 210 in the 1000. The consequence of using such Wheat as food, especially the last mentioned, would, of course, be a step toward starvation, even though no greater evil resulted. It is, however, well known to be highly prejudicial to health and the higher standard of living among the poorer classes of our population, compared with these of some continental countries, is the only cause of their exemption from the dreadful disease mentioned above as resulting from the use of bad Rye. That such disease might occasionally prevail among them here from similar causes, under a more restricted form of diet, is evident from a record in the Philosophical Transactions for the year 1762. The case in question occurred in the village of Wallisham, about 15 or 16 miles from Bury St. Edmund's, Suffolk, and the report of it was forwarded to the Royal Society by Dr. Wollaston, attested by the Rev. Mr. Bone, the curate of the parish, and is abridged as follows:—Some of the Wheat belonging to a farmer in the neighbourhood, being laid or beaten down by bad weather, and the grain much damaged in consequence, was collected and threshed apart from the remainder. Being unfit for the market, it was sold at a low price to any of the farm-laborers, and other people of the village who might be inclined to purchase. The sale

of this corn commenced about Christmas, and to one poor family, whose chief, or possibly sole support it was for some time, the result was most alarming and unparalleled. It appears that the consumption of the clog-wheat or rivets, as it is termed, by the father, mother, and five children, was about two bushels in the fortnight; the same being eaten in the form of bread and puddings, both of them very indifferent in quality. But to poverty, cheapness and sufficiency of food are always irresistible inducements, and this unwholesome fare was continued, without intermission, until the mother and her children were attacked, within a very few days of each other, with gangrenous ergotism. The first indication of the disease, intense pains in the lower limbs, occurred on the 10th of January, which were probably mistaken for rheumatism; and when these subsided, within the course of the week, numbness and insensibility of the parts succeeded, terminating in mortification. The condition of the family at the time Dr. Wollaston made his report to the Society is here subjoined:—

'Mary, the mother, aged 40. Right foot off at the ankle; left leg mortified, a mere bone, but not rot off.

'Elizabeth, aged 13. Both legs off below the knees.

'Sarah, aged 10. One foot off at the ankle.

'Robert, aged 8, both legs off below the knees.

'An infant, aged 4 months. Dead.

'The father was not attacked until about a fortnight after his wife and children, and in a slighter degree. In him the pain was confined to two fingers of his right hand, which turned blackish, and withered. Another labouring man, in the same parish, who had eaten of this bread, suffered from numbness in both his hands for about a month. They were constantly cold, and his finger ends peeled; one thumb, he says, remains without any sensation.'

In several instances, where bread made from the same corn was eaten in the farmer's own family, as well as by other persons, no prejudicial effects were noticed, probably in consequence of such bread being only occasionally used, and as an adjunct to other wholesome food. The nature of the disease with which the Wheat was affected, in this lamentable case, does not appear to have been ascertained; but the circumstances are well authenticated, and were in my boyhood, the early part of the present century, the subject of local tradition in the part of the county of Suffolk in which they took place. It is possible that the fatality attendant upon the use of the damaged grain, in the unfortunate family above mentioned, arose quite as much from the absolute deficiency of proper nourishment, as from the alleged poisonous quality of the mildewed fungus; but, with such examples before us, too great caution cannot be enforced regarding the use of grain or flour of suspicious character."



### To Avoid Running Out of Hay.

Every farmer naturally has an aversion to running out of hay in spring before grass comes. No one desires to buy that which he ought to have raised, to keep his cattle from starving; and the only alternative, when short of fodder, viz., placing them on short allowance, is still worse. The farmer should know before he enters winter whether he has enough feed for all his domestic animals.

To ascertain this, many resort to past experience, determining as nearly as they can, by guess—often by a very vague kind of guessing. Those who have kept careful record of the number of tons consumed by a given herd of cattle, or a certain number of horses, may determine more nearly. Where the cattle and horses have been weighed, and the aggregate weight of the herd thus determined, the estimate may be made with considerable accuracy. Some animals eat more than others for the same weight; a greater difference is occasioned by the severity or mildness of the weather, or the degree of shelter given from the cold; but as a general rule, a horse should have three per cent of his weight daily in food (hay or grain,) and cattle, which digest better, two and a half per cent. If the farmer has ascertained the number of tons of fodder he has deposited in his barn, he may now, if he understands arithmetic, determine pretty nearly, how his hay is likely to run, before grass time.

If he has no record of the amount of his hay, he may determine, very nearly, by measuring. First, by finding the length, breadth, and depth of the hay, he at once knows the number of cubic feet. Good solid timothy; the average of a bay 12 or 15 feet deep, will weigh a ton, to about 500 cubic feet. If the hay is clover, it will require 600 or 650 for a ton; and if the hay is only 5 or 6 feet deep, add one-sixth more.

After determining the number of tons, and the whole weight of all his animals, he may at once know if he has enough. The result will, however, be considerably modified by causes which he has more or less at his control. Regularity in feeding will have its influence; good feeding racks will prevent much waste; and comfortable shelter will save many tons to every large herd. A skillful farmer informed us, that formerly when he had just erected a fine new barn, with ample shelter of the best kind, he had learned, as he thought, according to his usual estimate, that he would have to buy hay to complete the wintering of his animals; but on trying his new sheds and stables, so great was the saving actually effected, that he had several tons the next spring to spare.—*Country Gentleman*.

### The Real Value of Artificial Cattle Foods

Professor Anderson, Chemist to the Highland Society, has carefully analyzed the principal

cattle condiments which have recently obtained great notoriety. In the new number of the "Transactions of the Society," he gives the ingredients of each sample submitted to analysis, and thus sums up his opinion of them:—

"The examination of these analyses shows that there is a very close general resemblance among the samples. Whatever difference may exist in the nature of the ingredients or the proportion in which they are mixed, there is but little in their nutritive value. They are, in fact, all composed of ordinary feeding grains, with the addition of certain aromatic or bitter substances, forming but a small portion of the whole. The methods of chemical analysis which enable us to state how much sugar or albuminous compounds any mixture may contain, do not admit of our determining the proportions of the various seeds or other substances mixed together; nor is this a matter of any moment as far as nutritive value is concerned, for it is immaterial whether these particular elements are derived from one or other grain. It is their combined effect which is of importance. Looking, therefore, at these foods merely in a nutritive point of view, it must be unhesitatingly asserted that they have nothing to recommend them. They are, in fact, inferior in this respect to many of the simple foods in common use—such for example, as linseed or oil-cake. Neither have they any claim to be considered as "concentrated" foods in the sense in which we speak of concentrated manure. There has been no removal of the innutritious matter, the water being nearly the same as in most seeds, and the woody fibre exceeding in amount that found in the common grains or in oil-cake. Nor can this excite any surprise, for they are all mixtures of those substances with aromatic seeds or roots, which are all much richer in woody fibre than the nutritive grains.

"The presence of aromatic or bitter matters is, therefore, the sole peculiarity of these cattle foods; and it is obvious that these substances ought to produce any effect of which they are capable, just as well if they added to the ordinary food of the cattle, as if they be mixed by a manufacturer with other substances before being sold to the farmer.

"It has been already remarked that the effect attributed to aromatics by the makers of these foods is, in the last degree problematical, and unsupported by any well ascertained facts; and their assertions must go for nothing, unless they are prepared to support them by experiments which shall be satisfactory to experienced feeders. As matters at present stand, they must be judged of on the same principles as those used in estimating any other food, and in this respect they cannot be ranked very high. If they possess any special action, it is self-evident that it must belong to the aromatic or bitter substances they contain; and if the makers wish to satisfy

the farmer on these points, they ought to put it in his power to use the aromatics alone, and allow him to mix them with such foods as he may choose. This course however, will by no means suit their purpose. At present they take carob beans, Indian corn, and other substances, costing £8 to £9 per ton, which are mixed with a small quantity (about 10 per cent) of some aromatic, costing perhaps £20 or £25 per ton, and the mixture so produced, at a cost of perhaps £10 or £11 per ton, is sold to the farmer at £30. It is quite obvious that as long as a manufacturer can sell the article he produces at a price approaching three times its intrinsic value, he will not trouble himself to inquire into the exact facts of the case, and will be satisfied with denying, in place of refuting, the statements of scientific men. The opinions I have expressed regarding these feeding-stuffs are in complete harmony with those entertained by all agricultural chemists. They have already been often expressed, and their accuracy strenuously denied by the concentrated-food makers, and they will no doubt be again denied, but they will not be disproved by them. If the manufacturers really desire to satisfy the agricultural community, the proper course would be for them to submit their foods to some farmers of experience, in whose judgment full confidence can be placed, and agree to stand or fall by the result. From this ordeal they will doubtless shrink; and as long as they do so, they must be content to bear the imputation of trading on the credulity of the farmer, and selling him an article at three times its real value.

"I have not hesitated to express thus distinctly the opinions I entertain, because this is a subject on which science can speak with no doubtful voice. It is not a question in regard to which there can be any difficulties, but is one of comparing the results of analyses with those of other and well-known foods; and before a minute examination the alleged "discoveries" of the inventors of these substances vanish into thin air, or rather revolve themselves into the art of making the farmer pay dear for a cheap article."

---

## Agricultural Intelligence.

---

### Meeting of the Board of Agriculture.

The Board of Agriculture met at their Rooms, 188 King Street West, Toronto, pursuant to call of the President, on the 29th ult., January, 1862, at 3, p. m..

Present: Messrs. E. W. Thomson, President; Hon. G. Alexander, Hon. D. Christie, Hon. H. Ruttan, R. L. Denison, F. W. Stone, President of the Agricultural Association; Professor Buckland.

The Minutes of last Meeting were read and confirmed.

After some informal conversation in reference to the objects of the Public Meeting called for to-morrow, 30th inst., to take into consideration the amendments desirable to be made in the Agricultural Statute, the following mentioned communications were submitted:—

Letters from several Agricultural and Horticultural Societies, naming the delegates to the public meeting on the 30th inst.

A letter from Mr. F. Shanly, tenant of the house and premises of the Experimental Farm, asking for a remission of rent, to the amount of \$211.60, on account of certain improvements stated to have been made by him on the said premises.

A special report upon some Shropshire Down Sheep, lately imported by Mr. Geo. Miller, of Markham, and exhibited by him at the Provincial Exhibition at London last year, suggesting the awarding of a special prize to the same.

From Mr. Chamberlin, Montreal, Secretary to the International Exhibition Commission to take place at London, England, this year, soliciting the co-operation of the Board in procuring a collection of cereals and other farm produce for the said Exhibition.

From Mr. Alex. Campbell, London, late contractor for the Provincial Exhibition Buildings at that city, asking for payment of an account of \$595.39, for work executed upon the Exhibition Grounds beyond that for which he had been paid by the local committee.

Two letters from J. H. Flock, Esq., Solicitor, London, on behalf of Mr. Campbell, requesting payment of the above claim.

From a Committee of the West Elgin Agricultural Society, complaining of proceedings which had taken place at the Annual Meeting of that Society, on the ground that a large number of persons, who, the Committee believed, were not legally members, had taken part in the election of office-bearers, and overruled the legally constituted members of the Society, and asking for the advice of the Board in the premises.



## OF THE BOARD OF AGRICULTURE.

Ordered—In reference to the Shrophshire Down Sheep, exhibited by Mr. Miller at the London Provincial Exhibition, that the prizes remain as awarded by the Committee of Judges at London.

Moved by Hon. Mr. Alexander, seconded by Hon. Mr. Christie, and

*Resolved*,—That Professor Buckland and the Secretary be requested to republish, as an extra of the next number of the *Agriculturist*, a small manual giving to the farmers information respecting the culture and after management of flax, to be distributed in those counties where the farmers are desirous of introducing that product.

The Board then adjourned to 10 a.m., to-morrow.

The Board resumed according to adjournment.

Present, the same members as yesterday.

Major Campbell, a member of the Board of Agriculture of Lower Canada was also present.

The Minutes of yesterday were read and approved.

Some conversation took place on the nature of the changes desirable to be made in the *Agricultural Statute*. Major Campbell, on request of the Board, gave some explanations as to the details of the Bill which he had introduced into Parliament.

The following gentlemen were nominated to form the nucleus of the Local Committee for the Provincial Exhibition of this year, at Toronto, viz.:—F. W. Jarvis, Esq., Sheriff of York and Peel; J. P. Wheler, Esq., Warden of the Counties; J. G. Bowes, Esq., Mayor of the City of Toronto; James Beachall, Esq., President of the Toronto Electoral Division Agricultural Society; Hon. G. W. Allan, President of the Toronto Horticultural Society.

The Secretary was instructed to request these gentlemen to meet at the Board Rooms on February 8th proximo, at noon, to consider the preliminary arrangements connected with the approaching Exhibition.

On motion of Professor Buckland it was Resolved that the Board of Arts and Manufacturers be requested to *revise* the Prize List of the Arts Department of the Exhibition, in the same manner as they had done last year.

The Board then adjourned in order to attend the Public Meeting to be held at noon, this day, in reference to the *Agricultural Statute*.

### PUBLIC MEETING.

The Public Meeting, called by circular, in accordance with the resolution passed at the annual meeting of the Agricultural Association at London, in September last, a copy of which circular appears in the *Agriculturist* of 1st ult., assembled in the lecture room of the Mechanics' Institute, Toronto, on the 1st ult.,

at noon. The attendance was large and of a highly influential character.

The following gentlemen were present:

#### DELEGATES FROM COUNTY AND ELECTORAL DIVISION AGRICULTURAL SOCIETIES.

|                           |                       |
|---------------------------|-----------------------|
| North Hastings .....      | Henry Ostrom.         |
| Victoria .....            | John Gibb.            |
| Lincoln .....             | J. C. Rykert, M. P.P. |
| Brockville .....          | C. Sibbald.           |
| Hamilton .....            | Geo. Rcach.           |
| West York .....           | E. C. Fisher.         |
| South Simcoe .....        | G. D. Morton, M. D.   |
| Prince Edward .....       | D. B. Solmes.         |
| Niagara .....             | A. C. Currie.         |
| Lennox .....              | John Hawley.          |
| South Waterloo .....      | James Cowan, M. P.P.  |
| Grey .....                | James Ross.           |
| East Middlesex .....      | James Johnson.        |
| Toronto .....             | Hon. G. W. Allen.     |
| Essex .....               | Alexander Bartlett.   |
| Lambton .....             | Archibald Young.      |
| Huron .....               | John Hunter.          |
| North York .....          | E. Jackson.           |
| West Durham .....         | Matthew Jones.        |
| Peterborough .....        | John Walton.          |
| South Wellington .....    | Col. Saunders.        |
| South Wentworth .....     | W. A. Cooley.         |
| North Wellington .....    | John Beattie.         |
| East Durham .....         | John Foott.           |
| North Simcoe .....        | Walter Raikes.        |
| North Wentworth .....     | Thos. Stock.          |
| Norfolk .....             | Oliver Blake.         |
| East York .....           | Archibald Barker.     |
| Haldimand .....           | Jacob Young.          |
| North Oxford .....        | John Dunlop.          |
| South Ontario .....       | John Shier.           |
| South Leeds .....         | Dr. Richmond.         |
| North Lanark .....        | John Menzies.         |
| Addington .....           | J. B. Aylsworth.      |
| West Brant .....          | James Maxwell.        |
| East Brant .....          | Wm. Patton.           |
| East Northumberland ..... | A. J. Wright.         |
| Peel .....                | John Tilt.            |
| West Northumberland ..... | John Wade.            |
| Halton .....              | E. Bowes.             |

#### REPRESENTATIVES OF HORTICULTURAL SOCIETIES.

|                      |                   |
|----------------------|-------------------|
| Cobourg .....        | Glover Bennett.   |
| St. Catharines ..... | D. W. Beadle.     |
| Peterborough .....   | Rev. V. Clementi. |
| Hamilton .....       | Geo. H. Mills.    |
| Paris .....          | Chas. Arnold.     |

#### MEMBERS OF THE BOARD OF AGRICULTURE.

E. W. Thomson, R. L. Denison, Hon. D. Christie, Hon. G. Alexander, Hon. H. Rutlan, F. W. Stone, Professor Buckland.

#### MEMBERS OF THE BOARD OF ARTS AND MANUFACTURES.

Dr. Beatty, W. H. Sheppard, W. Edwards, Rice Lewis, Dr. Craigie, T. Sheldrick, H. E. Clarke.

Lower Canada Board of Agriculture, Major Campbell.

The delegates having taken their seats, Colonel Thomson, President of the Board of Agriculture rose and explained that this meeting having been called in accordance with a resolution of the Agricultural Association, was properly a meeting of Delegates from the County Agricultural Societies, and the members of the Board of Agriculture did not propose to take part in the proceedings unless called upon to do so. They would however be present to give any explanations that might be asked for.

It was then moved by Colonel Saunders, seconded by Mr. Cooley, that Colonel Thomson be requested to take the chair.—Carried.

Moved by Mr. Johnson, seconded by Mr. Beadle, that Mr. Hugh C. Thomson be requested to act as Secretary.—Carried.

Moved by Mr. Blair, seconded by Mr. Foott, that the members of the Board of Agriculture present be requested to take a share in the deliberations of the meeting.—Carried.

On motion, Major Campbell, of Lower Canada, was also requested to take part in the proceedings.

[For the sketches of speeches which follow, we are principally indebted to the report of the Toronto *Globe* newspaper.]

The Chairman, in opening the proceedings, said the object of the meeting was to take into consideration a Bill which passed the House of Assembly last year, but which was rejected in the Upper House. This Bill did away with the Agricultural Association *in toto*; it deprived the people of the different agricultural societies of the privilege of sending up delegates to the annual meeting for the selection of officers and for the selection of a place at which to hold the next annual fair.—The Bill entirely did away with this and left the power in the hands of a Board of Agriculture to be elected by the agricultural districts as proposed by the Bill. It entirely tomahawked the old association, which had been in existence sixteen years, which had worked to the approval of the public, and had been admired by visitors from all parts of the world. If the meeting thought another mode of electing the members of the Board of Agriculture was preferable to that now pursued, they would now have an opportunity of making their views known.

Hon. David Christie wished to correct a wrong impression which perhaps might be made by a remark of the Chairman. He [Mr. Christie,] referred to that portion of his speech relating to the rejection of the bill by the Upper House. It was not rejected by the Upper House—it was referred to a committee and the committee did not report. The reason was that Messrs Alexander and Allan, with himself (Mr. Christie,) felt that it would be very unwise to give their assent to the changes proposed in the absence of a single

petition; for there was not a single petition presented in favor of the bill. It was, therefore, laid over for the purpose of ascertaining what the wishes of the people of Upper Canada were in reference to it.

Hon. Mr. Alexander endorsed Mr. Christie's explanation.

Major Campbell said, as he was a foster-parent of the bill which it was now proposed to discuss, he would with the leave of the Convention explain its bearings.

He appeared at the meeting as a representative of the Board of Agriculture of Lower Canada. At its last meeting a resolution was passed deputing two of its members, the President (Hon. L. V. Sicotte) and himself, to attend this meeting to give any explanations connected with this bill. The President was unwell and unable to attend. He (Major Campbell) was therefore left the sole representative of Lower Canada. It was felt in the Eastern portion of the Province that sufficient interest was not taken in the Board of Agriculture, and they came to the conclusion, that if its organization was somewhat altered by dividing the country into districts, and allowing each district to send a member, greater interest would be felt by the people. At the third session of the last Parliament, he (Major Campbell) obtained a committee to enquire into the matter. It was composed of members from Upper Canada as well as from Lower Canada. The committee sat for a considerable time, and at last made a report upon which his bill was based. By the time that was done the session came to an end. The succeeding session—the last—he (Major Campbell) immediately upon taking his seat, introduced the bill and it was again referred. The bill which was passed by the Lower House was the result of the deliberations of the Committee. It differed in some respect from the *projet de loi* which he (Major Campbell) had submitted. At the present moment the Board of Agriculture was composed of eight members, four retiring each year who might be re-elected. The different societies might either return the same four or others in their place. It was found in Lower Canada on the one hand exceedingly difficult to make any change in the members, and on the other hand any party might by a little underhand work before the election, cause the rejection of candidates. These were the principal reasons which induced the committee to propose the alterations contained in his (Major Campbell's) bill. They thought that each section of the Province should be divided into twelve districts, and that the agricultural societies in each of these districts, at their annual meetings, should elect one of their number to be a member of the Board. This was the principal alteration proposed. It was also sought to separate the Boards of



Arts and Manufactures from the Agricultural Associations, permission being given these two bodies to join together when they saw fit. The Committee thought agriculture was now strong enough to walk alone. In the circular sent round by the Secretary, he mentioned the chief point—the difference in the mode of electing members of the Board. He also spoke of “the dissolution of the Agricultural Association.” That certainly was discussed in the Committee, and it was felt that if the Board of Agriculture was elected in the manner he (Major Campbell) had stated, that they would then fully represent the agricultural population, and that there was no necessity for sending up delegates every year merely to choose the next place at which to hold the Exhibition and to elect the officers of the Society. Major Campbell concluded his remarks by assuring the meeting that the Lower Canada Board did not in the least desire to dictate. He merely appeared to explain the views they held.

Col. Saunders, delegate from South Wellington, said the principal objection felt in his district to the Board of Agriculture was the way in which its members were elected. There was no chance of putting a new member in. The people of Guelph tried it for some time, but were quite unsuccessful. Major Campbell's bill entirely met their views. Each district would then have a chance of sending to the Board a man in whom it trusted. He was sure a great majority of the farmers took this view.

Mr. Jackson, delegate from North York said the Society he represented, felt that some other mode of electing members to the Board was wanted than that now in use. They had felt this for many years. But he was not quite sure Major Campbell's bill met the difficulty. It provided that the members of each district should meet for the purpose of electing a member. Was the end to be gained worthy the labor it would cost? Each district would spread over several counties, so that the members of the Societies would have to travel many miles to the place of meeting. The Society to which he (Mr. Jackson) belonged, thought this would be a difficulty in the way of the effectual working of Major Campbell's bill.

Mr. Johnson, from Middlesex, said he had not met a man in his travels who did not approve of the new method proposed for electing the members of the Board. With reference to what the chairman had said, that the Board of Agriculture would be destroyed by the Bill of last session—

The Chairman had not said so.

Mr. Johnson said the circular that had been issued, at any rate, stated that by the bill of last session the Agricultural Association would be destroyed. He (Mr. Johnson) did not see

it in that light. The members elected by the districts would constitute the Board, and the whole thing would go on regularly enough.

Mr. Barker, of East York, expressed himself in favor of an alteration in the mode of electing members to the Board.

Mr. John Foott, Port Hope, said he thought there were no two opinions as to the desirability of effecting an alteration in the mode of electing the members of the Board. But there was another matter of perhaps greater importance. It was felt that the interests of the agriculturists had been subordinated to those of the artists. The farmers who brought in their cattle to the Provincial Show had to pay \$5 for a shed, while the Mechanics had expensive buildings erected for them and used them free of cost. Let the Board of Agriculture be separated from the Board of Arts, and allowed to unite when they thought it their material interest to do so.

Mr. Thomas Stock, of North Wentworth, was not quite sure that the Board of Agriculture was strong enough to stand alone without the assistance of the Board of Arts. He felt that they could not offer sufficient attractions to the public at the annual exhibition. He agreed with the previous speakers that an alteration in the mode of electing members of the Board was necessary. The objection taken by the delegate from North York was not valid. The farmers took greater interest in the Society than that. Neither twenty miles, nor one hundred miles would stand in the way.

Mr. Archibald Young, of Lambton, moved, —“that the 12th and 13th sections of the Bill before Parliament last session, relating to the mode of electing members of the Board of Agriculture, be approved by this meeting.”

The 12th and 13th sections are as follows:—

“XII. Upper and Lower Canada shall each be divided into twelve agricultural districts designated by number, as in schedules A and B annexed to this act, and each comprising the counties designated.

“The Agricultural Societies in any electoral Division, Parish or township in each District shall, at their annual meetings, nominate and elect one person to be a member of the Board of Agriculture of the same section of the Province; and the person who shall obtain the majority of the votes of the Agricultural Societies in a District, shall represent the District at the Board of Agriculture; and the Secretary of each Society shall, within eight days after such election, forward to the Minister of Agriculture the name of the person chosen by such society.

“XIII. The first election shall take place at the annual meetings in 1862, when six Districts, to be named by the present Board, in each section of the Province, shall each elect a member to replace the four members then

retiring from the said Board respectively. The other six Districts in each section of the Province, shall each elect a member at the annual meetings in 1863, to replace the remaining four members, whose term of service will then expire."

At this stage of the proceedings, it being half-past one, the meeting adjourned an hour for refreshment.

Upon re-assembling,

Mr. James Cowan, M. P. P., seconded by Mr. Ross, moved,—“That the meeting proceed to take into consideration the Agricultural Bill passed by the House of Assembly last session; that the Bill be read clause by clause by the Secretary, and the sense of the delegates taken on each clause.”

Mr. Barker, seconded by Mr. R. L. Denison, moved,—“That the existing Statute, under which we now act, be taken up and considered clause by clause, and that such amendments and alterations as may be deemed necessary be added.”

Mr. Barker's amendment was lost. Mr. Cowan's motion was declared carried.

The Secretary then proceeded to read the Bill of last session, clause by clause.

The first clause is as follows:—

“1. The Bureau of Agriculture and all Agricultural Societies and Boards of Agriculture lawfully organized or established shall continue to exist, except in so far as the said Bureau, or such Societies and Boards, are altered or affected by this Act.”

The first clause in the present law reads as follows:—

“The Bureau of Agriculture and all Agricultural Societies, Associations and Boards of Agriculture, incorporated or otherwise created, continued or recognized by or lawfully organized or established under the repealed Act, passed in the 16th year of Her Majesty's reign, chap. 11, shall continue as if the said Act were still in force, except in so far as the said Bureau, Association or Board are altered by this Act.”

Col. Denison considered if the first clause was passed, the old Agricultural Association would be abolished. He did not think this was right. The old Association had spread its branches and roots far and wide. It had life members all through the country, who would cease to be members of the Agricultural Association; and if that were the case, the Association would be deprived of its agricultural character altogether.

Mr. Sheriff Ruttan said the great point was to satisfy the country that it was fairly represented at the annual meetings.

Hon. G. W. Allan said if the old association were done away with, the doors would be closed to amateur agriculturists—a very important class who had aided the Society.

Hon. D. Christie said the objection taken to

the constitution of the Board was that it was a close corporation. But what was the remedy sought? It was proposed to do away with the old association, and to place the management of the whole affair in the hands of twelve men, over whom there was no check, in fact the new Board would be a closer corporation than the old one. He considered it would be a great calamity to the country when the members of the Board were not compelled, at least to appear once a year, face to face with the delegates.

It was ultimately agreed, after considerable conversation, to add the words, “and associations,” after the words “the Bureau of Agriculture and all Agricultural Societies,” as a means of removing the objections raised.

The clause was then carried.

The several clauses were then read and adopted as far as the eighth.

The ninth clause provided that out of the whole amount voted for the encouragement of Agriculture, four and a half per cent. in Lower Canada, and in Upper Canada two and a half per cent. thereof shall be appropriated and devoted to the promotion of Agricultural Instruction and information.

2. The Board of Agriculture may in its reports to the Government indicate in what manner this sum should be employed.

3. Of the whole amount voted for the encouragement of agriculture, ten per cent. in Upper Canada, and eight per cent. in Lower Canada thereof shall be placed at the disposal and in the hands of the Board of Agriculture for the purpose indicated by law.

Mr. Jackson moved in amendment to this clause the parallel clause in the present Act.

The clause reads as follows:—

“Out of the sums appropriated for agricultural societies in Upper and Lower Canada respectively from Provincial funds, two and one half per cent. shall be applied under the authority of the Governor in Council towards the promotion of agricultural instruction and information.”

Major Campbell pointed out that the clause in the bill had been unanimously agreed to in Lower Canada, and presumed that the meeting did not want to deprive the other section of the Province of the appropriation.

Mr. Solmes moved that the 2½ per cent. for Lower Canada be struck out of the clause. He appreciated the justice of the remark made by Major Campbell.

Mr. Cowan, M. P. P., moved;—“That out of the whole amount voted for the encouragement of agriculture in Upper Canada, 2½ per cent. thereof may be appropriated and devoted to the promotion of agricultural instruction and information by the Board of Agriculture in that section of the Province.”

Mr. Stock seconded the amendment, and pointed out that if the Bill remained as pro-



posed, the deduction of the  $2\frac{1}{2}$  per cent. was compulsory. Under the amendment it was discretionary.

Mr. Sheriff Ruttan contended that by the 2nd section it was discretionary with the Governor in Council to deduct the money. Hitherto it has not been deducted.

Mr. Cowan's amendment was carried.

The second and third sections of the clause were also carried.

For the tenth clause of the Bill, stating what persons shall be *ex-officio* members of the Board of Agriculture, the tenth clause of the present act was substituted; with the President and Vice-Presidents of the Association added as *ex-officio* members of the Board.

The 11th clause was adopted.

Mr. Ostrom moved in amendment to the 1st section of the twelfth clause (quoted above,) that the districts be eight instead of twelve.

Mr. Stock spoke against the amendment. He did not think twelve too large a number.

Dr. Craigie thought that the best way to constitute a Board would be for each county Association to elect a delegate. These delegates should meet and elect an Executive Committee of six or eight members.

Mr. Solmes agreed with Dr. Craigie. The County Society of Prince Edward was strongly in favor of appointing delegates, and he (Mr. Solmes) thought the counties would at least bear half the expenses.

Mr. Sheriff Ruttan moved—"That the present mode of electing the members of the Board of Agriculture is unsatisfactory, and that in future each County Agricultural Society shall at their annual meeting in January, elect one delegate, all of which delegates shall meet at—on the first Tuesday in February, and then and there shall elect eight gentlemen who shall form the Board of Agriculture."

Dr. Craigie seconded the amendment.

Mr. Barker moved in amendment to the amendment, "That the several county societies shall at their annual meeting, name two persons to act as delegates, who shall, at the meeting of the Provincial Association, at its annual Exhibition, have each a voice in the election of members of the Board of Agriculture, and the election of such members shall take place on the evening of Thursday, in the first week of the exhibition."

Mr. Blake seconded this amendment.

Mr. Fisher wanted to know why it was necessary to change the constitution of the Board at all? Had the Board not gained the respect of the farmers of the country? Did gentlemen think they were going to get a better Board? If they did, it was their duty to point out why a change was needed. Let those who were so anxious for a change speak out. Not one single reason had been given for it.

Mr. John Tilt was in want of the same kind

of information as Mr. Fisher. He did not want change for the sake of change. Neither did those whom he represented.

Mr. Jackson said it surprised him a little to hear that change was not needed. Why, then, was this meeting called? At the last meeting of the Association in London very great discontent prevailed at the manner in which the Board was elected. It was found impossible to infuse new blood into it.

Mr. Oliver Blake made an appeal on behalf of the old constitution. What had they done? What were the complaints against them? He had not heard the first word of complaint.

Mr. Cowan suggested that Mr. Sheriff Ruttan should so modify his motion as to cause the delegates to meet at the Annual Exhibition for the election of the Board.

Col. R. L. Denison said Mr. Ruttan's motion was a good motion. But Mr. Barker's motion was better, because there would be a good deal of difficulty in getting the delegates to attend a meeting in the winter. But if—as Mr. Barker proposed, the meeting was held at the time of the Provincial Show, there would be plenty of delegates to attend. He hoped Mr. Sheriff Ruttan would withdraw his motion.

Mr. Sheriff Ruttan had proposed the amendment because he wanted to popularize the Association. He had lately seen a disposition to hold the exhibition in one particular portion of the Province. He was opposed to this centralization. He wished to see the exhibition pushed into every nook and corner of the Province; to be taken east to Kingston, and not confined to the west. He was afraid to name for a day of meeting one of the days of the Provincial Fair. He had seen so much of the difficulty attending the transaction of business on these occasions. Besides if the delegates met at some other time, in a quiet room, much of the "electioneering," and many of the annual quarrels would be avoided.

Mr. Barker's amendment was then put from the chair, and carried by a majority of four—26 yeas to 22 nays.

Mr. Cowan said it was now decided how the members of the Board should be elected. He (Mr. Cowan) moved "that the number of elected members should be eight."

Mr. Solmes seconded the motion.

Mr. Cooley moved, seconded by Mr. Jackson, "That the number of elected members be twelve."

Mr. Cooley's amendment was carried by a vote of 24 to 22.

The meeting then, at six o'clock adjourned for one hour.

Upon re-assembling—The several clauses of the bill were read and approved as far as the 25th.

Hon. Mr. Allan, seconded by Mr. Beadle, moved in amendment to clause 26, the following:

—"Every Horticultural Society in any city, town, or incorporated village, incorporated under this act, or which may have been incorporated under any other act of the Provincial Legislature, shall be entitled to a public grant, equal to the amount subscribed by the members of such society and certified by their Treasurer to have been paid into his hands in the manner provided by the section of the act relating to Agricultural Societies, provided that the whole amount granted to any such society shall not exceed £100 in any year." Carried.

Clauses 27 to 29 were adopted.

In place of clause 30 in the bill, clause 48 of the existing statute was substituted, on motion of Mr. Barker.

The 31st clause was adopted, with the additional proviso, that Township Societies should contribute \$10 to the funds of the County Society, either by membership or otherwise.

Clauses 32 to 36 were adopted.

Clause 37 was adopted, with the following addition, on motion of Mr. Barker, "that in the event of the Secretary or Treasurer dying or resigning office during the term for which he has been elected, it shall be the duty of the Directors and they are hereby empowered to nominate and appoint a fit and proper person to fill the office for the unexpired term of the person so dying or resigning as aforesaid."

Clauses 38 and 39 were adopted.

The 40th clause was adopted with the addition of the same proviso contained in the old act, giving certain County Societies \$1000 per annum.

Clauses 41 and 42 were adopted.

In place of clause 43 in the bill, clause 61 in the act was substituted, upon motion of Colonel Denison.

The clause in the bill was as follows:—"The Board of Agriculture shall receive from Government, and pay over to the county societies, the Public Grants to which they are respectively entitled"

The 61st clause of the present act has, in addition to the above, the words "and the said Board may retain for the use of the Agricultural Association, one-tenth part of all such grants."

Clauses 44, 45, 46, 47 and 48 were approved.

The sections relating to Lower Canada were passed over.

Mr. Cowan said there was a feeling in the section from which he came, that the township shows were too small to do much good, and detracted from the county exhibitions. He therefore moved:—"That the amount paid to any township society from the funds of any county or riding Society, shall not exceed the amount which such township Society would be entitled to receive, were all the townships in such county or riding to organize township societies."

Mr. Rykert seconded the motion.—**Lost.**

The 71st clause was approved.

A number of clauses following related to the Board of Art and Manufactures.

Dr. Beatty said these clauses provided for the separation of the Board of Arts from the Board of Agriculture. This separation was desired in Lower Canada, but not in Upper Canada. Some gentlemen had indeed said that the arts and manufactures were able to walk alone. But how were they to walk alone? Agriculture got a grant in each section of the Province of \$52,000 a year; but arts and manufactures of only \$2,000. Unless the Legislature would bestow a grant on the Boards of Arts and Manufactures, they could not "walk alone" just yet. Dr. Beatty went on to defend the present union, and moved, seconded by Mr. Barker—"That this meeting disapproves of the separation of the Board of Arts and Manufactures and of the Board of Agriculture, so far as relates to the holding of joint exhibitions in Upper Canada as proposed by the bill under discussion." Carried.

Dr. Beatty read a number of clauses relating to the Boards of Arts and Manufactures agreed upon some time previously by the Boards of Arts and Manufactures, and by the Board of Agriculture.

Mr. Beadle seconded by Col. Denison moved that they be approved by the meeting. Carried.

[The clauses were very lengthy. They were published in the April, 1861, number of the *Journal* of the Board of Arts and Manufactures, and having been previously well considered elicited no debate.]

The meeting next proceeded to consider a number of clauses proposed by the Board of Agriculture and the Board of Arts and Manufactures, as an addition to Major Campbell's bill, immediately following his clauses constituting the Boards of Arts and Manufactures. The proposed additions were published in the number of the *Agriculturist* of April 16th, 1861, and are very similar in purport to the clause in the present act relating to the Provincial Agricultural Association. They would have the effect of preserving the Association, which would be abolished by the bill of last session. They were adopted by the meeting without discussion.

On motion of Dr. Beatty, a new clause was adopted to the following effect.

"The Council of the Association shall have power to grant licenses to parties to sell refreshments upon the premises enclosed for the Exhibition."

Mr. Sheldrick moved, seconded by Mr. Solmes, that the Presidents and Secretaries of the Board of Agriculture and the Board of Arts and Manufactures be a committee to draft a bill in accordance with the action of this meeting, and to print a sufficient number to distribute among the various Societies, the members of the Legislature and of this Convention.



Col. Denison moved that the draft be published in the *Journals* of the respective Boards.

Col. Denison's amendment was carried.

Mr. Cooley moved, seconded by Mr. Barker, "That Messrs. Allan, Christie, and Denison be a committee to draft an address of condolence to her Majesty, and that it be signed by the Chairman on behalf of the meeting." Carried.

#### THE WORLD'S FAIR.

Col. Thomson said he begged leave to say a few words upon another subject. He was one of the commission for collecting articles for the great International Exhibition in London this year. Parties desiring to exhibit were requested to send their samples to London, C. W., by the 18th of this month; in Hamilton by the 20th; Toronto by the 22nd; Kingston by the 24th. A general selection would be made at Montreal by the commissioners. The goods had to be in England by 31st March. The share allotted for the exhibition of Canadian products was not so large as in 1851, but it was to be feared so much would not be wanted. The Government had only placed \$6,000 at their disposal this year. In 1851 they placed \$60,000, and for the Paris Exhibition, \$80,000. However, the commission were determined to do the best they could.

A vote of thanks was then given to the Chairman and the Convention adjourned *sine die*.

#### County of Welland Agricultural Society.

We have been furnished with the following abstract of the report of this Society for the past year, for publication in the *Journal*:—

The number of people congregated to witness the Fall Exhibition was greatly in advance of any of its predecessors.

The entries at the Fall Exhibition were not so great as at that of last, being 547 against 684. However, the converse obtained in regard to the Spring Show. The following synopsis in regard to the entries at the Fall and Spring Shows may prove interesting:—No. of stallions entered, 14; of two years old stallions, 2; of team horses, 6 pairs; of pleasure horses, 4 pairs; of three years old colts, 4; of two years old colts 11; of 1 year old colts, 11; of buggy horses, 18; of saddle horses, 15; of mares and colts, 15; of bulls over two years, 4; under two years, 1. Thorough-bred stock,—of cows, 5; of two years old heifers, 3; of one year old heifers, 5; of calves, 5; of grade stock—of oxen, 4 yoke; of three years old steers, 4 pairs; of two years old steers, 4 pairs; of one year old steers, 1 pair; of cows, 9; of two years old heifers, 6; of one year old heifers, 6; of calves, 4.

The display of sheep was excellent, and exceedingly creditable to their owners, both in

regard to the number and quality of animals exhibited.

The grain department was inferior to that of last year, arising no doubt from the lateness of the spring, and the wetness of the latter part of summer; rust in many cases supervening, and causing a deficiency in the quality of the grain thus attacked.

But there was still a greater deficiency in the root and fruit departments, particularly in the latter, and this may have arisen from two causes; 1st. from the over-loading of the previous year, and 2nd. from the late frosts in the spring. Not a solitary peach was shown.

The manufacturing department compared favourably with those of former years. There was an excellent combined mower and reaper shown, which elicited much commendation from those versed in such implements, said implements being manufactured by Messrs. McDougal & Russell, Fort Erie.

The Ladies, as usual, did their duty in regard to the filling up of their department, and many of the articles exhibited by them shewed correctness of design and elegance of finish.

The directors further state that they appropriated the sum of \$50, of which sum only \$40 28 was expended, for the erection of a temporary building, to hold the products exhibited at the last show; the materials of said erection being available towards the construction of a more permanent building at some future time.

In conclusion, the directors express their gratitude for the support bestowed on their labours by a generous public, and hope that the same may be extended even in a greater degree to their successors in office.

A. R. SCHOLFIELD, *President*.

#### East Durham Agricultural Society.

This spirited Society held their Annual Meeting at the Town Hall, Port Hope, on the 16th ult., and concluded the proceedings of the day by partaking together of an excellent dinner, at which we are informed no intoxicating liquor was used, at Church's Hotel. The particular occasion of this friendly re-union was the presentation of an address, on the occasion of his retiring from office, to W. F. Allen, Esq., late President, and formerly Secretary of the Society, and who, we know, has been a most energetic and useful officer. Amongst the other invited guests were the Rev. Mr. Hunt, the Rev. Dr. Shortt, Messrs. John Wade, R. Hume, and A. Alcorn. After due justice had been done to the viands upon the table, the farewell address was presented, which, with the reply, we subjoin:

*To W. F. Allen, Esq., retiring President of the East Durham Agricultural Society.*

DEAR SIR,—It is with very great regret that the members of the East Durham Agricultural

Association have been made aware of your intention to leave the County, and that your business affairs require you to reside outside the limits of our Association, of which you have been, for the last seven years, a worthy and useful member.

We are proud to be able to say, that you commenced your career as an Agriculturist in connection with this Association, and that you have been treading in the footsteps of your father, who was for many years an eminently useful member of this community.

Agriculture is a noble employment. Men of all grades—some of them much distinguished for learning and refinement—after having employed their youth and early manhood in other pursuits, have devoted their declining years to Agriculture, believing it to be, of all occupations, the one best calculated to promote peace and domestic happiness.

It is pleasing to see young men of talent and education devoting themselves to this noble work. We hope that you will still be found in the ranks of the Agriculturist; and that your future life will be spent in carrying out those principles which you have advocated in the past.

We cannot allow you to retire from amongst us without offering you some mark of our esteem and regard.

Please accept this Address, as a token of respect from the Directors and members of East Durham Agricultural Association.

Signed on behalf of the Association,

A. CHOATE, *President.*

Port Hope, January 16th, 1862.

#### MR. ALLEN'S REPLY.

I thank you for this generous expression of your esteem. I also thank you, Mr. President, for the kind manner in which you have alluded to the usefulness of my father as an Agriculturist. I am proud of being an Agriculturist, and, it gives me much pleasure to look back on my past connexion with the East Durham Agricultural Society, and I only regret that I have not brought greater ability to the furtherance of its interests. My energies thus far have been devoted to the interests of Agriculture; and although I have had flattering inducements held out to me to forsake this pursuit, still, I am determined to continue a farmer, believing it to be, as you express it, "the most noble employment we can engage in."

Please accept my warmest thanks for your kind wishes for my future prosperity and happiness, and I beg to remain, Your obedient servant,

W. F. ALLEN,

To the President, Directors, and Members of  
E. D. Agricultural Society.

#### Drainage.

We take from the London *Prototype* the following account of the trial of a new draining

plough invented by Mr. R. Robson of London Township, which, if it accomplishes all that is stated of it, may turn out a valuable implement:—

MR. ROBERT ROBSON'S DRAINING PLOUGH.—We were much gratified with the result of a visit paid the farm of Mr. Robert Robson, of London Township, on Monday, in company with Mr. John Carling, our city member. Having heard so much said of the properties of the draining plough, the effort of the inventive genius of Mr. Robson, we resolved to personally inspect the invention, and, certainly, at first sight, a person would naturally be led to smile at the novel appearance of this useful implement, made up as it is in the most simple, unpretending, and in fact, entirely primitive build; but when placed behind two horses, and a careful ploughman, disappoints the veriest sceptic in agricultural matters, and cuts a drain, which, for width and depth, is truly marvellous, doing away with a large amount of manual labour, and consequently, expense. Every one acquainted with the nature of thorough draining will know the utility of the system when successfully and perseveringly carried out. Smith, of Deanton, Scotland, the world renowned thorough-drafter, has given the farming community a criterion to judge by, in years past, of the wonderful success, as well as the advantages that attend a perfect system of thorough draining, and to him, we think in those modern times, is due to a large extent, the commendation for pushing this beneficial system of land culture to the right point of prosperity—and we all know he has reaped a rich reward, both as regards the benefits he has conferred upon the agricultural world, besides his own pecuniary advantages, which were handsome, and largely remunerative.

In Ireland, in 1843, we witnessed the excellent results and large profits which a large agriculturist reaped, after having for some years carefully copied Mr. Smith's mode of draining, coupled with subsoil ploughing; and now, in our neighboring London Township, we believe the same system may be adopted, and successfully carried out, with half the expense, time and labor, which had to be resorted to in the mode of draining we have alluded to, if farmers will only give Robson's principle of thorough draining a fair and honourable trial. And on Monday last, on our arrival at Mr. Robson's farm, we were not surprised to see a number of intelligent and respectable gentlemen, farmers of course, who had come to test the merits of the new farming implement, and give the people the result of their investigation. This, we believe, was done most impartially, and with a desire to give the tillers of the soil and the inventor himself the advantage, if there were really any advantages in it, of placing in the hands of the farmers a plough for draining purposes, calculated to lighten labor and save men's toil, and throw more of the burden of it upon horses, while, as we have remarked, considerable economy is practised at the same



time. The plough, which we observed for the first time upon the exhibition grounds, and, indeed, in concert with many others, smiled at, is, we repeat, a novelty in appearance, seems to be of the mediæval ages, and one would be more likely, when getting a first look of it to take up one of Wilkie's best axes, and "hack it down," with a fell sweep to the ground. Suffice it to say that it is formed of the roughest material, a simple piece of wood constructed in all points as a plough, *with two sides or mould boards*, which open up a drain three feet in width at the top, and thirty-two inches deep. A narrow spade, (much like that used for cutting turf,) is then taken, with which the bottom of the drain is cut eight inches deep, and tapering on each side, about an inch and a-half at the bottom, and four and a-half inches wide at the top. Before this operation is commenced, we should remark that an ordinary plough precedes the draining plough, by running a furrow on each side, so as to prepare the ground for its reception. After the drain has been cut, a sod is cut with the operating plough, of four inches wide at the top, with one of its surfaces grassy; this is taken and placed by a man on the top of the water-course which has been made with the narrow spade, taking care to have the grassy side of the sod down, and when placed on the drain resembles much the slanting or oblique thrust of a bridge, or the key-stone of an arch, evidently locking the drain effectually, and although simple in appearance, apparently possessed of great durability, for Mr. Robson, after finishing the laying of the soil, placed one of the horses on the drain, made him walk over it, without the least detriment having been done. In cases where the land is sandy, or quicksand, the inventor of the draining plough places a number of faggots, jointed together, in the drain, with straw underneath and above, which he states, works remarkably well, and proves that the difficulties incident to land subject to slide, may be effectually done away with, and a good substantial water-course secured for the carriage of the water.—The draining plough has been proved by calculation, able to do as much work per day as twenty-five men, with spades and shovels. Mr. Robson ploughed with his drainer two hundred and twenty-five feet, while five men dug during the same time, about fifteen yards, or fifty feet, the plough, it was remarked, doing the labor in a much superior manner than that accomplished by the men.

In the matter of screened-gravel drains, we may here state that the gravel is equally suitable for sewerage, and by computation Mr. Robson has ascertained that one bushel of gravel will make fourteen feet of drain. As regards the probable cost of the drains, Mr. R. says that two men and a span of horses, (the latter working only two hours a day) can complete forty rods of draining in a day, and at this calculation, it would not cost more than two dollars for forty rods or five cents per rod, the

lowest charge for making drains we have heard of in this fast age, and allowing all who are anxious to have well-drained farms the chance of making them at a price that "bangs Banagher." We strongly advise those who are in love with Mr. A. P. McDonald's theory of thorough draining to call on Mr. Robson, and after a trial of his scientific invention, which has been tested in various ways, they will have no reason in the future to cry out, "My land is too wet; I can't grow anything in it."

After the process of formation and closing of the drain was over, the gentlemen present adjourned to the hospitable home of Mr. Robson, where his health was proposed in a very flattering manner by Mr. Carling, with several well-timed remarks upon the success of his farming invention. It was then moved by Lionel E. Shipley, Esq., seconded by Wm. Balkwill, Esq., and

*Resolved*,—"That we, the undersigned, having been witnesses of the successful working of the thorough-draining plough, the invention of Mr. Robert Robson, of London Township, deem it a most useful auxiliary in farming operations, and cheerfully recommend it to the farmers of the County of Middlesex, and to the people of Canada generally, as a useful and suitable implement in agricultural pursuits, combining cheapness, economy and usefulness in the draining of land."—Carried.

Lionel E. Shipley, William Balkwill, John Beat-  
tie, Andrew Robson, Robert Williams, Lionel  
W. Shipley, Robert Waugh, John Lamb, John  
Bowman, Ogle Blair, John Calvert, Oliver  
Wilson, Hugh Kennedy, James Blair, John  
Eleback, Philip Rosser.

GEO. ROBSON, *Chairman*.

### Judging of Cattle.

At the last meeting of the Smithville Fat Cattle Show, Mr. Torr made in his speech one capital point:—"This was in denouncing the absurdity to which the use of the tape is now carried; and we quite agree with the speaker when he said that it not unfrequently tends more to destroy the correctness of a man's eye for form and general contour than of any absolute good. And yet how frequently do we find men, who should know better, rushing up to an animal that they barely look over, save for the purpose of throwing the measure round him? We were never inclined to believe much in a Judge whose best arguments for what he did were a knotted string and a pencil; and we hope the long-called-for rebuke from so able a Judge as Mr. Torr is himself, will teach others to rely more upon all the eye and hand can tell them as to form and character. Of course in some cases it might be as well to be armed with such precise information, like the carpenter under cross-examination, who, in answer to the

qu w far he was from the prisoner when the assault occurred, replied in a moment, 'Seven feet eight inches and three-quarters. I thought some fool or other might be asking the question, so I took out my two-foot rule and measured it.'"

**MINKS AS INSECT-CATCHERS.**—A correspondent of the Rural New-Yorker, who seems to make a business of raising minks for their fur, relates the following in regard to their catching grasshoppers and bee-moths:—"Two years ago last May, I caught seven young minks. I made a pen of boards near my bees, twelve feet square, and put them in it. About the first of July grass-hoppers would occasionally sail in, and they would jump and catch them very quick. It soon became sport for boys to catch grass-hoppers and throw them on the side of the pen, to see the minks jump and catch them. Hearing the same jumping at night, I went out to see what was going on, and I found they were catching millers. The millers were so thick about my bees that I could catch about thirty or forty a night in a pan of buttermilk, and now I have no nullers about my bees. My minks cannot climb a rough board fence four feet high. They have young once a year,—from five to eleven,—and before I take off their pelts I keep them in the dark for about one month, to make them darker than the wild ones."

## Horticultural.

### The New French Roses.

Scores of new roses are sent out by the French every year. Some of them, perhaps one in a dozen, prove valuable, and in a few years become popular, and their names are as familiar as "household-words"—like *Giant of Battles*, *La Reine*, *Caroline de Sansal*, &c.—but the remainder are forgotten in a few years. A correspondent of the London *Florist*, who has made a sojourn among the rose-growers of the continent, names about sixty new varieties that are to be sent out this winter and next spring as candidates for public favor. He says:

"I thought that the best service I could render during my recent visit to France was to obtain such information upon the subject of the forthcoming roses as might gratify my own curiosity, and be somewhat of a guide to them. I have made the best use of my eyes and ears that I could; have visited Margottin, Verdier, Marest, Touvais, Troulliard, Portemer, &c.; have obtained lists of the new varieties, and, in fact, done my best to get together some information on the point, and the conclusion that I have come to is, that we are not to expect any very striking additions to our lists this season. There are some which promise well, but when I say that there are, I verily believe, nearly a hun-

dred new ones to come out, it will be seen how difficult is the task of selection, especially as one feels that under the most favorable circumstances not one-tenth of these will be retained in our lists; in such a case, one must rely more on the known characters of the venders than on anything else. Men like Margottin and Marest will not willfully deceive; they may be mistaken, but they regret it as much as the public when it is so. There was one matter in the cultivation of roses, which I heard from Troulliard, of Angers, which struck me forcibly as one likely to be of service to us, and this is to graft low on stocks of the Dog Rose, raised from seeds. However excellent the Manetti may be for strong, vigorous growing kinds, I think that no one can say that it is equally good, especially on strong soils, for the more delicate constitutioned kinds; for they, not having the power to receive the sap, are soon overpowered, the stock begins to throw up suckers, and the rose languishes and dies; while stocks of the Dog Rose taken from the hedges, are, on the other hand, generally so defective in root, that they answer badly for that purpose, but by sowing seed of the Dog Rose you obtain nice healthy stocks, with abundance of fibrous roots, not too vigorous in character, and giving a fine, healthy start to the rose; and is also more permanent than it is likely to be on the Manetti; it is, at any rate, worthy of the consideration of rose growers, and I am not aware that it has yet been tried in England."

### Botanical Society of Kingston.

We observe that this valuable society has lately held its annual meeting for the election of officers. The following gentlemen were appointed for the ensuing year:—

PRESIDENT.—Principal Leitch, D.D.

VICE-PRESIDENTS.—Prof. Williamson, LL.D.; Prof. Dickson, M.D.

#### COUNCIL.

Prof. Fowler, M.D.; W. G. Hinds, Esq.; Prof. Litchfield, M.D.; M. Flanagan, Esq.; Prof. Horatio Yates, M.D.; Wm. Ferguson, Esq.; J. Duff, Esq.; J. J. Burrows, Esq.; Geo. Baxter, Esq.; Octavius Yates, M. D.; Thos. Briggs, Jr., Esq.; Professor Lavell, M.D.; Augustus Thibodo, Esq.; Rev. Prof. Weir, A.M.; John Watkins, Esq.; John Creighton, Esq.; Rev. Prof. Mowat; Arch. J. McDonell, Esq., Recorder; J. Carruthers, Esq.; Hugh Fraser, Esq.; Jeremiah Meagher, Esq.; Hon. Alex. Campbell, M. L. C.

SECRETARY.—Prof. Lawson.

TREASURER.—Andrew Drummond, Esq.

#### CURATORS.

Mr. J. F. Ingersoll, Mr. John K. McMorine, Mr. Wm. B. Ferguson, Mr. John Bell, Mr. A. T. Drummond, Jr., B. A.

LIBRARIAN.—Mr. R. V. Rogers, B.A.



## The Dairy.

### Butter Making.

[The following statement is copied from the last number of the *Journal of the New York Agricultural Society*, and will throw some light on the mode of preparing the superior butter found in the Philadelphia Market]. EDS.

PHILADELPHIA, 10th mo., 21st, 1861.

*The process.*—After the milk is drawn from the cows it should be strained into pans properly arranged on a bench for the purpose, with a small quantity of fresh sour milk in each one, to hasten the raising of the cream, which should on all occasions be taken off from thirty to thirty-six hours after being milked, it being found that, standing longer in a large dairy, more is lost by deteriorating the quality of the butter than is gained in quantity. When the cream is skimmed off of the milk into a large cream pot it should be put in the butter hole in the spring, and let stand one day, and then skimmed off, so as to remove any sour milk that may have settled from it to the bottom of the pot, and should be subsequently stirred every day until churned, to prevent rancidity from taking place on the top of the cream by too long standing, which is the main cause of all the strong butter that is made. The cream should be churned twice in the week during the summer months, and all the year where there is a sufficient quantity to warrant it. The temperature of the cream and churn should be about sixty-two degrees, so as to warrant the butter to come right, and in the proper length of time, which should be about thirty minutes. There is as much danger in having the butter come soft by over-churning as by the atmosphere being too hot. In order to regulate the temperature of the cream in the fall, winter and spring, it should be set in a tub of hot water until it comes to the temperature above designated—the butter broken in the churn to the size of peas and chesnuts. The buttermilk should be drawn off through a fine hair sieve from the vent of the churn, which should be about an inch hole. A sufficient quantity of spring water should then be put in, and a few revolutions of the churn, when it should be drawn off, and then another quantity of spring water put in and tumbled in the churn until gathered into a mass. The water should all then be drawn off and the butter cut into cracks, as it lays in the churn, to receive the salt, which should be a pint for fifty pounds, regulating below that, or above that, according to the quantity churned. The butter should then be tumbled in the churn until the salt is mixed with it, and it will then do to take out in ten or fifteen pounds, and lump into pounds, ready for sponging, which should be done by having a sponge of proper

size enclosed in a linen cloth and passed over the lump, by pressure, to absorb the brine and moisture it contains, which should then be weighed and printed if intended for the market. The sponge should be frequently squeezed out of cold water as dry as possible during the sponging and weighing of fifty or one hundred pounds.

*Remarks.*—The buttermaker will see the advantage of this mode of salting and working butter over any other mode, and particularly of the lever or worker, as it is called, from the fact that less of it is exposed to a warm atmosphere at a time, as it must necessarily be where fifty or one hundred pounds are operated upon on a broad surface, making the butter soft and oily, which is detrimental to its quality, however carefully attended to, from the time the milk is taken from the cows. The above plan was perfected by experiment by me, and carried out for a succession of years, as thou knowest, with a success as to quality and sale of my butter not surpassed by any one at the time I was operating. Respectfully, &c.

H. EUCHUS.

## The Poultry Yard.

### Spanish Fowls.

EDITORS OF THE CANADIAN AGRICULTURIST, —Gentlemen,—You copy in your last number under the head of "Profitable Poultry Keeping," a comparative estimate of several breeds of fowls from the *Journal of Horticulture*.—As the notice of one of these breeds is quite contrary to my experience, (I should rather say my wife's, as she is the chief lover and manager of the poultry,) I would guard your readers by being misled by such a statement.

I cannot pretend to give an opinion on the comparative profit of the different favourite breeds. We at first were contented with the common mixed kinds, which, with good management, answer very well, and are perhaps the hardiest. We tried the Cochins and did not like them, they are voracious eaters, which in a suburban abode, where food must be bought, is of consequence. They are always wanting to sit, are awkward nurses, and their flesh is coarse and inferior.

At length we obtained a fine and seemingly pure Spanish cock and hen. We continue to keep and admire them and their descendants, and from actual trial we say: good layers, steady sitters, kind nurses, eggs remarkably fine, flesh very good. We think the Spanish poultry somewhat more delicate than the common sort, requiring a comfortable house, and a little care; possibly the brood may be more difficult to rear than in some other varieties. I do not want to magnify their merits to the

discouragement of others, but having never had finer or more abundant eggs, and that even at the season when they are scarcest, I do not like to see them unjustly condemned, and should feel obliged by your allowing me to say what I have found them as a note on the article I have referred to.

## H.

[Thanks to our correspondent for his interesting communication. We shall be obliged to any of our readers who may favour us with their views and experience on these matters. Eds.]

## Poultry.

*Concluded from Page 53.*

A very important essential in poultry keeping is a proper house. It is not at all necessary to be an expensive or fancy affair, but it must be comfortable, warm, and well ventilated. Heat is sometimes introduced by means of hot air pipes connected with some adjoining furnace; and small stoves are also used for heating. Earthen floors are preferred by many good managers to bricks, boards, or stones, and a quantity of fine sand should be laid down in a corner of the house, or under an adjoining shed, as this helps to preserve the poultry from insects, in consequence of their rolling in it, and using it as a sand-bath. The floor should also be thickly coated over with fine sand, when such can be procured, especially if it is formed of bricks, boards, or stones. The roosting perches are constructed in the form of a wide ladder, the frame in which they are inserted being set in a sloping position against the wall. The perches are placed at a foot apart, and are from one and a half to two inches in diameter. "The value of low perching cannot but be known to most keepers of fine, large fowl, who are sure to break their breast-bone when coming down from high perching, and from which they scarcely ever recover." (Nolan). Boxes or baskets, set near the ground, and furnished with cut straw, must be provided as nests for laying and hatching, and the hatching nests should be placed, if possible, in a quiet place, apart from the other hens. Plenty of pure water is indispensable in a poultry-yard; the inside of the houses, perches, &c., ought to be whitewashed at least twice a year, and kept clean at all times.

Ducks.—The white Aylesbury is a large, fine, and valuable breed, of which the pale bill is a distinguishing point. The Rouen "res mbe wild ducks in colour of plumage and bills. The larger they are the better"—and great size is a characteristic of it—"but no weight can compensate for faulty plumage, or green or leaden coloured bills in the ducks." The Rouen duck is an excellent layer. There are other breeds, but these are the most useful for ordinary purposes.

Duck eggs are generally set under a hen, but the duck herself makes a good mother. The time of incubation is thirty days; being nine days longer than in the case of the hen's eggs. The ducklings should be kept from water for nine or ten days after being hatched, and their food should consist chiefly of soft, but at the same time nutritive matters; such as barley meal and water or milk, mixed thin, being very suitable food. Chopped egg—boiled hard for the purpose—with oatmeal, may also be given moderately. Ducks require little assistance in the way of feeding, if they are allowed to ramble through the fields, where they are of much service in picking up slugs and other insects; but if they are confined they must be regularly and well fed on such food as we have mentioned in the case of fowls, and when fattening for table use, it is recommended to mix treacle and chopped mutton fat with the barley meal, &c., upon which they are fed.

THE GOOSE.—The common domestic goose is either of a white or gray color, the large white sort, called the Embden goose, being very superior. Still, the geese which are kept by the majority of ordinary farmers in the country want size—a very serious defect, for size is everything in geese; and, therefore the best breed to cross with is the Toulouse, which possess great size, as well as other desirable qualities. "Their prevailing colour is a blue gray, marked with brown bars; the head, neck (as far as the beginning of the breast), and the back of the neck, as far as the shoulders, of a dark brown; the breast is slaty blue; the belly is white, as also under the surface of the tail; the bill is orange-red, and the feet are flesh-coloured." (Nolan.)

Geese are long-lived birds, and they do not reach their best as breeding stock until they are three or four years old. One gander is allowed to four or five geese, and if well fed, laying will commence by the middle or end of January. Eleven eggs are a sufficient number to set under a goose, and the period of incubation is thirty days. Goose eggs are occasionally hatched under turkey hens, and common hens are also used for this purpose, but the latter will not cover more than four goose eggs. The sitting goose must be regularly supplied with food, and the first food of the goslings may consist of bread soaked in milk, bran mixed with boiled potatoes, and some boiled vegetables,—cabbage, greens, &c.—mixed with the food are very useful. The food must not be cold, but, at the same time, not too warm. If the weather is good, the goslings with their mother, may be turned out on a grass field, when the former are ten days or a fortnight old; but if the weather is cold or wet, they should be confined to a shed, and carefully fed. A good run at grass is of great service—in fact, indispensable for young geese; and therefore, we generally find that numbers of them are reared near commons, or similar tracts of ground; but when intended for an early market,



they must be well fed in addition to what they pick up. Boiled potatoes, or turnips, mixed with bran, barley meal, or oatmeal, and given in a slightly warm state, will hasten the fattening process. Boiled rice is also excellent food, and with moderate attention the young geese may be made quite ready for use by the time they are three months old. Generally, however, they are kept over until the crops are reaped and carried, when a run on the stubble puts them in good condition, which may be still further increased by a subsequent confinement in a house for a fortnight or three weeks, during which time they are liberally fed on oatmeal, peas, beans, barley, or Indian corn meal, all mixed up, with boiled potatoes or swedes. They must be supplied with water, gravel, and plenty of clean, dry straw.

**THE TURKEY.**—This class of poultry is one of the most valuable, and, from the want of success which sometimes attends the rearing of them, they are often considered the most troublesome. The Cambridge breed is larger than any other, is of a white and black color, sometimes gray, and occasionally mixed with copper coloured tints. The American turkey has a bright, metallic hue, and has more of the wild nature than any other variety.

Thirteen eggs are a sufficient number to set under a turkey hen, the period of incubation being from twenty-eight to thirty-one days. During incubation the hen must be as little meddled with as possible, beyond what is necessary in giving her food and drink. When the chickens are hatched, leave them alone without handling, do not offer them food of any kind for ten or twelve hours, at least. "If you are foolish enough to cram pepper-corns down their throats to warm them; or to dip them, either head over heels, or the legs only, into cold water; to make them hardy; or to give them ale or wine to strengthen them; or to comply with any other of the old wives' senseless traditions, which really seem as if they were intended to *prevent* the rearing of turkeys—you must take the consequences. Many will die—some may survive; of these you may boast as specimens of successful nursing. But does the wild turkey, or any other bird in a state of nature, commit these perposterous outrages upon her infant brood?"—(Art poultry, *Morton's Cyclopaedia*)

The first food should be hard boiled egg, chopped fine, mixed with chopped lettuce, the green of spring onions, or chives. "Green food in abundance turkey-chicks *must* have, intermixed with their more nutritious diet." Moderately boiled rice and oatmeal, or barley meal, made into dough, may also be given to them. "If you have a very old, rich, rotten dung-heap, or spent hotbed, full of little worms, wood-lice, grubs, &c., let the chicks have three or four shovelfuls of that also in the course of the day. But whatever you give them, it is of no use setting it down and leaving them to feed them-

selves; you must stay *and see them eat it*, and watch that each chick takes its share. For if, by any chance, they have been neglected for an hour or two, and have fasted too long, they will then sulk, and perhaps refuse to eat at all. In this case they must be gently crammed, or they will surely not be reared; but it is a most blameable fault in the poultry-keeper ever to let his or her charge fall into this low, mopish state. The great secret in rearing turkeys is to be *constantly* tempting them with a variety of food; every half hour is not at all too often. They *will do* with somewhat less attention; but this untiring officiousness towards them quite pays; their little stomachs should always be full; their growth is most rapid, and, indeed, enormous, if we compare the proportions of a new hatched chick and a bird at Christmas fit for the spit, and weighing perhaps 15 to 16 pounds. Their growth must be unceasingly *sustained* as well as liberally supported; for if it be not, it is not the mere difference between fine and undersized birds, which the lazy and niggardly breeder will have to suffer from, but not half the brood, perhaps not one of them, will ever be reared in the 'shift-for-yourself' system. . . . As the chicks advance in growth, their feeding need not be quite so frequent, but it must be equally profuse; let them have plenty of green food, as well as of corn, wetted barley meal, boiled rice, and insects. A well-hearted lettuce, taken in one hand and shred to them with a knife in the other, is excellent; she next time you go to look at them set a bunch of the thinnings of the onion-bed served out to them in the same way. Never appear before them without some present that they are likely to accept. So you will best make sure of attaining your object—a handsome flock in November. . . . The critical times with turkeys is when they are about the size of partridges, or before; their heads, which had hitherto been clothed with down alone, now began gradually to be covered with fleshy tubercles; the larger feathers, those of the tail especially, are making rapid growth, which is a trying drain upon the strength of the bird. You may, if you please, give them carraway seeds, rice; or other simple tonics; but the only efficient medicine is *generous diet, and plenty of it*, and that by itself will be quite sufficient."

## Miscellaneous.

### The Cerealia,—A Standing Miracle.

In treating of the Cerealia, or corn-plants, as special witnesses for God in relation to man, we pass by the fact, albeit important, that by nature man has no knowledge of his proper food—no instincts even to guide him in the choice of it; and that, had he been left originally to his own resources in respect of it, as the lower ani-

imals are, he would without doubt have perished of hunger or of poison, from eating at random of some deadly thing, or through sheer ignorance of wherewithal to fill his belly. And we pass by also a vast number of other relative facts (their name is legion),—such as the use of *fire* in the preparation of man's food, including the whole art of cookery (simple or complex) as forming a part of the "conditions of his existence;" to say nothing of the necessary connexion that subsists between man's sustentation and man's own head and hands, or between it and his domestic and social relations; all which, bearing directly on the matter now in hand, serve to show that, in respect of that which cometh upon him daily—the care of his fleshly tenement—nature, on the one hand, has in a great measure left him out of her reckoning, while, on the other, God has in an especial manner been "mindful of," and has "visited" him.

All that we purpose doing is, to direct attention to the cerealia as a class of vegetable productions, which, as neither *natural* plants themselves, nor growing *naturally* in any part of the world, demonstrate by facts within themselves—facts which our modern science has ascertained, or has verified, and which may be seen and read of all men, that they must of *necessity* have been produced *miraculously*; and which furnish, moreover, with no tradition as to this, nor any specific reference to them in this relation by Moses, a proof the most striking that can well be imagined, and all the stronger that it is *indirect*, of a special exercise of the Creator's care for His creature man.

The cerealia, which comprises wheat, rye, barley, oats, maize, rice and millet, are beyond all doubt man's proper food—the food proper for civilized man—the possession and the use of which leave him free to devote his energies to the advancement of his being, the multiplication of his race, and the accomplishment of the main object of his existence in the world. Without corn, living on wild roots, or by hunting or fishing, and precariously, or from hand to mouth man is everywhere a savage and a cannibal—improvident, bestial, incapable of taking a single step towards a higher or a better condition. Animal food, indeed, civilized man eats, and was intended, doubtless, to eat; but not his brother's flesh. Such as it is,—beef, mutton, and the like—it comes to him remotely of a plentitude in corn; of the leisure for thought which this affords him; of the habits which tillage engenders; and in many ways besides. Yet corn is his staple food.

Comprised in the great natural family of *grasses*, the cerealia themselves are—all of them—*unnatural* species of this family! Their natural state, because their constant or persistent state—that in which alone they can be cultivated or will grow (unless they be *abused* by man),—and in which alone they are of any value

to him, is one which the botanist designates *abnormal*; the gardener, *monstrous*. And around this central fact in thier history, there clusters a number of other singular facts, all of which, more or less, cause them to stand out apart from every other kind of plant, invest them with a character altogether special, and, when fairly looked at, are seen to be plain and unmistakable "*marks of God*."

2. Let it be noted, first all, as to this condition of *monstrosity*, that, as of holding of other kinds of plants, it is one which is *occasional* only, or *accidental* and *transient*, which can be kept up only by careful cultivation, and which continually tends, notwithstanding, to revert back to the natural and primitive condition. With the cereals on the contrary, this abnormal condition is manifestly *their* primitive or natural, and it is, moreover, their *abiding* state. They have no tendency to degenerate, or to assume a lower, and, relatively to other plants, a more natural grade.

2. Man, indeed may *degrade* them. By a treatment of them of his own devising, steadily persevered in, but attended with some trouble to himself, because requiring several years for the accomplishment of the end aimed at, he can reduce them to the condition of a perfectly natural yet absolutely worthless grass. To understand how this may be done, one or two things must be premised. *Annuals* naturally, bearing seed of such a kind (so monstrous and so large, and withal in such abundance) as draws towards it, or the ripening, all the available energies of the plant, they form no buds at the root (they have in fact, no surplus vigor during the ripening to form any) whence new plants might spring up the following year. Therefore, their seed duly ripened they die, or rather are cut down in autumn, and then they *die out*, root and branch. They are *annuals of necessity*. They die of the exhaustion of seeding. They may be said, to apply an allusion of DeCandolle's, to perish in *child bed*. The natural grasses, however, that are *perennial*—the common grass of the field—bear both seeds and buds, and they bring *both* to maturity. Doing this they spring up year by year spontaneously from the buds they form; and they thus *multiply* as well as thus *perpetuate* themselves, covering the ground as with a carpet, and spreading over it a table of plenty for the cattle that feed on it, and that tread and repose upon it; and for whom, as they can neither sow nor reap nor gather into barns, nor make themselves a bed to lie down on and sleep, the Creator thus provides.

Differing thus widely from the natural grasses their congeners—differing from them, as we have seen, at this that they bear seed of such a sort as demands for the ripening of it, and exhausts, all their inherent vigour, and makes them *annuals*—the cerealia may nevertheless, by man's ingenuity, be converted in *perennials*. It is done by



debaring them from opening their seed. Cutting off the ear, the corn-plant comes in flower, and so hindering it from seeding, the plant, thus treated, will form a bud at its root, and from this bud it will spring up again the following year. If now left to itself, this second year, it will flower and bear fruit. Yet, let it be carefully observed, neither will the fruit have the quality, nor the plant itself the character, which are natural to them. Both the plant and its seed will to a certain extent, have been degraded by the process.

But if again, this second time, the plant is prevented from seeding, by being again denuded of its flower, it will as before, put forth a bud at its root, and spring up the third year. And if year by year this process be repeated, then in the course of ten or twelve years (so it has been found by experiment), the plant will be reduced, bit by bit it will have been degraded, to the condition of a naturally perennial grass, bearing a seed which is good for nothing.

3. Thus degraded by the cunning craft of man, then another fact demands attention, namely, this, that by no care or skill of husbandry can man restore the plant to its pristine state. He cannot bring it back to the condition in which he found it—the state in which God made it and gave it to man. It will remain what man has made it, a wild and worthless grass, perennial indeed intrinsically, yet, vital, destined ere long, having no pith or stamina, “no root in itself,” to give way and disappear before the true and natural grass. A thing of man, it shall not be allowed an abiding place in the world, to breed confusion in God’s own creation. Widely different in man’s power over other plants, wild or cultivated, cultivated by himself. He may raise them above their wild state; it is the business of the gardener to do so; and so doing, and making them abnormal, he may render them highly useful to himself as food. But this done, he must keep them in that state by his own care, intermitting which they will lapse back into their wild state; or thus cultivated, made abnormal by himself, he may at his pleasure let them become wild, and then bring them up again to their cultivated state. Man, however cannot thus play fast and loose with the cerealia. A strange law it is, surely, that to which alone of all plants, the Creator has subjected His own specially artificial plant, the cerealia. Strange that with them man may not intermeddle as he will! “*Nemo me impune lacessit*,” is true of them in a divine sense. Man may not degrade them but at his peril, the forfeiture beyond regain of his staff of life.

4. Unknown, then, not growing anywhere as wild plants, are as mere grasses, which the botanist may point to, and which he may describe, as the types and as the native habitats of the cultivated cereals, there is yet this further to be noted of them, namely, that they grow nowhere

spontaneously or of their own accord. They do not sow themselves, and so spread themselves by their seed over the earth, and to man’s vexation the thistle does, and as do other annuals. Left to themselves, they die out, disappear, and become extinct. Of this, tall and strong of stem and vigorous though they be, one cause is, that perennial plants of all sorts, weeds, thistles, the common grasses, “external agents which they are too weak to resist,” choke and supplant them.

5. The final cause, however, or the reason of the peculiarity now adverted to, as attaching to the cerealia, is to be found in the one appointed condition of their growth, a condition peculiar to them. “*In the sweat of thy face shalt thou eat bread*,” we have the divine expression of this condition, if, indeed in this other, “*Thorns and thistles shall ground bring forth to thee*,” we have not also the divine explanation of the fact that they will not grow spontaneously. Made expressly for man, given directly into his hands by God, man has himself been put in trust, for his own behoof, of their life and growth. “Behold, I have given you every herb bearing seed (seeding seed) which is upon the face of all the earth; to you it shall be meat,”—a kind widely different, so far, from the “green herb” which He gave for meat to every beast of the earth; (compare Gen. i. 29 with Gen. i. 30). Whether, if man had abode in the state of innocency in which he was created, thorns and thistles had not been, or the cereals had grown otherwise than they do, we are not informed, nor have we any data to go upon relative thereto. But now they are his for his meat on this one condition, that he sow them with his own hand in ground which his own hands have tilled; and such they have been in all his history that appears. “*In the sweat of thy face shalt thou eat bread*,” were the words spoken to him with reference to them after his fall—words true to this day—and scarcely uttered it would seem, with the addition, that “*in sorrow*” he should eat of that bread, when the Lord sent him forth from the garden of Eden to till the ground.

To sum up. Of the facts as to cerealia, this is the substance:—Cultivated varieties naturally, abnormal, monstrous states of some unknown and no where existing species of natural grasses (so the botanist, in words odd enough, gives expression to the fact).—\*they do not, as do the cultivated varieties of other natural plants, tend to revert back to their wild state, and thereby become, to man at least, and as regards his food, worthless. Such as they are essentially, in that

\* “Cultivated varieties of some unknown species, perpetuated as races.” “Wheat is an abnormal state of some plant.” “We are at a loss to know the original types and species.” —BALFOUR’S *Class Book of Botany*, p. 708. “The native countries of our more important cereals, or corn-producing plants, are altogether unknown.” —(BENTLEY’S *Manual of Botany*, 1861, p. 697.) “The corn-plants, such as they are found under cultivation, do not grow wild in any part of the world.” —(KNIGHT’S *Food of Man*, vol. i. p. 22.)

state they abide permanently. Again, bearing seed only, bearing no buds, they are strictly annual plants, growing up year by year from seed, and growing in no other way. Yet, withal, they do not grow, as do other annuals, of their own accord, or by the natural dispersion and germination of their seed. Cast on themselves, left to nature, they quickly disappear before the perennial wild plants and become extinct. The one condition of their permanency in the world; of their diffusion; of their growth in quantities adequate for man's needs,—a condition of existence, as we have said, peculiar to them, is, that they be sown of man in ground carefully prepared by him for them beforehand and duly fitted to receive them.

Can it be that any one, duly reflecting on the facts now stated in regard to the cerealia, should fail to see—*first*, that nature never could have provided or have preserved these plants for man; and, *secondly*, supposing as we must, the cerealia and man to have been coeval, that if man had been himself beholden to nature *alone* for what he is,—if, under her, he were and had been the *sole* architect of his fortunes in the world, the cerealia must have passed away and been lost to him, irretrievably and for ever, long before he could have raised himself from a state of nature.

This being the case, the character of the "conditions of existence" of the cereals being such as we have affirmed, and man's natural ignorance of their use and value being such as the history of the savage tribes demonstrates,† it surely needs no argument to prove, that not only must these plants have been *specialy* created by God for man, and created, too, at the time when he brought man into the world, but that man himself must have been *directly taught* of God, as well as the use and exceeding value of them, as the way to grow them. The history given us in the book of Genesis, of their relation to man, and man's relation to them, as is that of the Creator's converse with man respecting both, is in fact such a history, short as it is, as our modern science, if true to herself, must needs accept as *genuine*. No account of the matter other than given by Moses, will explain the known facts of the case. Had God not specially created the cerealia, nature never would have produced them. Had God not said to man, "Behold, to you have I given them for meat," man never would have *discovered* while yet he had them, their use as food. Had God not sent

man forth to till the ground, acquainting him that thus only, even to the sweat of his face would the cerealia grow, there would at this present be no corn in the world.

Nay, but for this, there would have been no corn in Egypt, 3500 years ago, when God, of set purpose, "brake the whole staff of bread," and "famine was all over the face of the earth;" and when, nevertheless, of His great mercy—for His mercy endureth forever—He sent a man, even Joseph (sold to be a bond servant) beforehand into Egypt, who forewarned of Him, gathered up all the food of seven years of plenty which were in the land, laying up in the cities the food of the field which was round about every city; and who, when the evil days came, and the dearth was in all lands, and was sore and grievous, opened all the store-houses, and sold corn to the Egyptians, and to all countries which came into Egypt to him for to buy thereof: a time when Israel (in whose loins lay the promised seed, the desire of all nations), that he might *not die but live*, also came into Egypt, and Jacob sojourned in the land of Ham.

A time it was, when making His own cerealia, or one of them, namely wheat, the occasion, God turned the current of human affairs into a channel altogether new, making also Egypt the cradle, and the wisdom of the Egyptians the school, in which to raise up and to rear and civilize the children of Jacob, his chosen; while yet, by signs and wonders, *miracles*, which wrought among them, He made known to them, and to the Egyptians themselves no less—a people civilized were always slow at heart to believe, that verily there is a God that ruleth in the earth, the Lord of Heaven and earth, and that this God is one Lord.

And these times, and the wondrous things that were done during them, have descended even to us. We have heard with our ears and our fathers have told us, how, aforesaid in Egypt, God, by the hand of Joseph, saved man from perishing from famine, as once he perished by water; and how, beginning therewith and there, he opened a chapter in human history which is not yet finished. And if now, in these days, His strange work had ceased, and we see no signs and wonders visibly attesting His presence and His agency in the world, it is not as if they had never been; "They have left behind them a wake which still bears us along with it." Yet even as it is, as day by day we eat our bread with cheerfulness and singleness of heart, giving God thanks, we may see on that same bread, if we will but look, the impress of a *miracle*, and the attestation of a *providence*, both still in silent operation around us. And if so,—then, with this sense of *Real Presence* of God in our common bread, we shall feel it to be but a small demand on our reason to believe (to single out one of those early transactions) that by the space of forty years in the wilderness, wherein nothing

† "When some European missionaries introduced into New Zealand the culture of wheat, telling the Maories that bread is made of it, they were rejoiced, for bread, in the form of ship-biscuit, they had often tasted and much relished. But when the corn was tall, they dug some of it up, expecting to find eatable roots; and when they found only fibres, they thought the missionaries were making game of them. . . . The Maories had derived all their vegetable food from roots; and therefore naturally supposed bread to be made of roots. That little hard seeds were to be ground (a process they had never seen, or imagined), and the powder made into a paste with water, and then baked was what could never have occurred to them."—ARCHBISHOP WHATELY, *Lessons on Mind*, p. 118.



grew that man could eat, God *miraculously* fed his chosen people with manna; believing which, we may well believe also all else that we are told, and may read for ourselves in His blessed Word, as to the "wondrous works done by Him in the land of Ham, and the terrible things by the Red Sea," in behalf of a people whom He loved, and with whom were bound up His purposes of mercy to the whole family of man.—*Good Words.*

ALEXANDER HARVEY.

### Scientific Jottings.

The relations which exist between the natural sciences are, perhaps, greater than at first sight may appear: it is only after having made oneself somewhat familiar with most of the separate branches of physics, &c., that one is able to form an idea how closely they are related to the more strictly called "natural sciences," a chain of relationship connecting the whole, so that it is difficult to have even a good popular notion of the one, without some knowledge, however slight, of the others. As an acquaintance with these subjects is considered necessary to every man of a liberal education, and as the taste of the public is inclining so much in that direction now-a-days, it may not be uninteresting to take a short glance at the connection existing both individually and collectively, between geology, mineralogy, chemistry, crystallography, and biology, (both animal and vegetable,) and in as short and succinct a style as possible to impress on the reader of any of these divisions of natural history, that he should not, through any inclination towards one particular department, deprive himself of the pleasure of its application to the others; and, since *application* is the whole use of a practical science, that he should neglect no opportunity of bringing his knowledge of one branch to increase that of the others.

Take that wide and interesting study, geology, for instance, its study, however useful, without its great expounder palæontology, would be one of the tamest and most uninteresting, and its practical application nothing but the work of a digger or delver, save for the small light that would be thrown upon it by the minerals which you might meet, and which of themselves would be of little value but for the rigid chemical and crystallographic laws to which they are subject, and palæontology itself would be useless and mere guess-work—you might have piles of fossil shells, and slabs of fossil reptiles and animals which would surpass those in the British Museum, and had you not zoology to identify your remains, and comparative anatomy to correlate their structures, you would be simply in the dark as regards the great problem of geology, the advancement of life on the globe.

The most trivial and apparently despicable circumstances relating to animal life should not

be passed over heedlessly when you come to apply your mind to the great problems which will be laid before you; and the very best exercises to which the young student in geology can apply himself are the works of the most eminent labourer in this field of science—Professor Owen. He will see there that the work he has before him is not that which a young lady would adopt to pass away her time, but something like reality, which will require the whole of his energies, and good will to boot. Inferior, certainly to the remains of animal life, but still affording an immense amount of information as to the former condition of the world, both as to climatology and structure, the beds of fossil plants and trees require to be studied with even more attention, inasmuch as there is less known about them, and that little requires to be well improved before anything like a definite classification of the flora and fauna can be arrived at. Of course this is the highest perfection of botany, and on which the most eminent naturalists have been, and are engaged. Thus a very fair botanical range is to be attained, and will repay the trouble of gaining it, without fear of limitation as to the number and description of specimens.

Zoology and botany being generally studied together, each will contrast well with the other, and render the somewhat tedious labor, an agreeable recreation. The other ally of geology before mentioned, namely, mineralogy, is only another name for applied chemistry; and some of the nicest and most difficult operations in chemical analysis must be performed before we can tell the name of a mineral, which, perhaps, to all appearance is the same as one of our every day friends; besides, the subject of mineralogy in its present rather crude state is one which by itself will be found highly interesting, as in it every one can indulge his fancy on certain points which are not very definitely arranged, and in which speculations he may, by attention and study, both theoretical and practical, effect something which may really advance one of the most attractive subjects in nature.

The grouping of the various elements of minerals into their proper formulæ gives occupation to heads which in point of ability are second to none; while not one of those men whose names will be seen in every book on mineralogy could tell the composition of even the simplest granite which we kick along the road were it not for the assistance of a few agents and simple manipulative operations. Chemistry is so wide a subject, it would be out of our power here even to hint at even the heads of its many relations; but from what has been said above, it may be supposed that the study of chemistry is absolutely necessary to one who wishes to have an intimate acquaintance with the crust of the earth; and the advantages to be gained in every day life from an intimacy with chemical phenomena can only be appreciated by those who have received its benefits.

Physics, including in its wide range electrical and magnetical disturbances, changes and appearances, with the theory of heat and meteorology in their relations to chemistry, are most marked and intimate; a thorough knowledge of either demanding a fair knowledge of the other, some of the most fundamental principles in the former being totally inexplicable without the assistance of the latter, and *vice versa*.

From the very short sketch above given of a few of the relations of the natural sciences, it is evident that a subject so wide and so respectively intimate in relations should be pursued with a view to the ultimate end—an equal knowledge of them all.—*Irish Farmer's Gazette*.

REMINISCENCES OF SMITHFIELD.—About 1100, Smithfield was little better than a swampy meadow, where certain smiths and armourers had set up their shops and forges, on which account it early became a place of considerable resort; but, shortly after, Henry I. granted a charter for a Priory of Black Canons, under the guardianship of St. Bartholomew. It became yet farther frequented when Henry II. permitted the monks to hold a fair, for three days annually, which ultimately grew into an important commercial gathering, as well as the occasion of general festivity. To the fun and frolic of the fair we may make allusion hereafter, but shall at present confine ourselves to the more serious incidents of the Smithfield chronicle. The open space afforded here to the Londoners was, for several centuries, used by them, in common with Finsbury-fields, for archery and athletic sports generally. Nearly all the Court military holidays were held here. Scarcely a tilt, joust, or tournament came off in any other quarter of the town, for it pleased the citizens to witness such scenes, and their presence made them more impressive. Appeals to the judgment of God were often decided here; and the ordeal by fire and water was of daily occurrence, as well as the duel, or kamp fight of the Saxons. We have alluded to the great Edward's presence here, after the victory of Cressy; and, in 1374, when he had fallen into "second childishness," though only in his sixty-second year, infatuated by the charms of Alice Pierce, he brought her hither in a splendid open car, sitting by her side; and calling her the "Lady of the Sun," he conducted her to the lists, followed by a train of knights, each leading by the bridle a beautiful palfrey, mounted by a gaily dressed damsel. This festival lasted seven whole days, and, according to the annalists, was marked by the most profligate expense. Here, too, his grandson, Richard II., held an unusually magnificent tournament, early in his reign. "There issued out of the Tower of London," says Froissart, "first, threescore coursers, apparelled for the jousts, and on every one a squire of honour, riding at a soft pace; then issued out threescore ladies of honour, mounted on fair palfreys, and

every lady led a knight by a chain of silver, which knights were apparelled to joust." Certainly the dissipation of those early times was partly rendered excusable by a spirit of gallantry and unselfishness. The gentry of the land, and even the merchants and workers of London and the great towns, were all deeply imbued by a love of warlike exercises, not unmixed with a chivalrous generosity which made English warriors the admiration of the world. We need only refer, as a proof of this, to the conduct of the Black Prince to his prisoner, King John.—*City Press*.

SHOES.—It is amazing the misery the people of civilization endure in and from their shoes. Nobody is ever, as they should be, comfortable at once in them; they hope in the long-run, and after much agony, and when they are done, to make them fit, especially if they can get them once well wet, so that the mighty knob of the big toe may adjust itself and be at ease. For my part, if I were rich, I would advertise for a clean wholesome man, whose foot was exactly my size, and I would make him wear my shoes till I could put them on, and not know I was in them. Why is all this? Why do you see every man's and woman's feet so out of all shape? Why are their corns, with their miseries and maledictions? why the virulence and unreachableness of those that are 'soft'? Why do our nails grow in and sometimes be torn violently off? Why are shoes so dear? All because the makers and users of shoes have not common sense, and common reverence for God and his works enough to study the shape and motions of that wonderful pivot on which we turn and progress. Because Fashion—that demon that I saw dressed in her own crinoline, in bad shoes, a man's old hat, and trailing petticoats, and with her, (for she must be *her*) waist well nipt by a circlet of nails with the points inmost, and any other of the small torments, mischiefs, and absurdities she destroys and makes fools of us with,—whom, I say, I wish I saw drummed and hissed, blazing and shrieking out of the world,—because this contemptible slave which dominates over her makers, says the shoe must be elegant, must be so and so, the beautiful living foot must be crushed into it, and human nature must limp along Princess Street, and through life natty and wretched. It makes me angry when I think of all this.—*Dr. John Brown*.

THE CAT AND SPARROW.—A cat caught a sparrow, and was about to devour it, when the sparrow said: "No gentleman eats till he washes his face." The cat, struck with this remark, set the sparrow down, and began to wash his face with his paw, but the sparrow flew away. This vexed puss extremely, and he said: "As long as I live, I will first eat and wash my face afterwards," which all cats do to this day.



NOT A BAD MISTAKE.—We have seen some awful typographical errors in our day and generation, but seldom any more absurd than the following. An editor, wanting a line to fill up a column, gave:

"Shoot Folly as she flies."—POPE.

In setting up the above, the printer had it thus:

"Shoot Polly as she flies.—POP!"

## International Exhibition, London, 1862.

THE Commissioners for Canada at the INTERNATIONAL EXHIBITION of 1862, give notice to all parties desirous of exhibiting Canadian products, whether application has been already made for the exhibition of the same or not, that such articles may be sent in for examination and approval to the following places, at any time between the TENTH DAY of FEBRUARY next, and the undermentioned dates, viz:—

IN CANADA WEST.—London, 18th February; Hamilton, 20th February; Toronto, 22nd February; Kingston, 25th February, and Ottawa, 28th February.

IN CANADA EAST.—Quebec, 14th February; Three Rivers, 18th February; St. Hyacinthe, 22nd February; Sherbrooke, 25th February next; and Montreal, 3rd and 4th March next.

Articles will be received and stored at the Depots of the Grand Trunk Railway Company at London, Toronto, Kingston, Quebec, Point Levi, Sherbrooke and St. Hyacinthe.

The Commissioners will begin their examinations at 10 o'clock, A. M., of each day named.

Intending exhibitors must deliver the articles for exhibition at the above named places, free of charge. Should they not be approved, the Grand Trunk Railway will return them free of charge, to any depot on their line from which they have been sent.

Parties sending in Grain or Woods are requested to transmit a certificate, stating the species and varieties, and where grown. Woods should be sent of the usual dimensions for commerce, and Her Majesty's Commissioners have expressed a desire that they be shown in planks 4 inches thick, showing the sap on both sides, or in 4 inch scantling, and accompanied, wherever practicable, by twigs with leaves or flowers.

Parties desirous of further information, may apply, concerning Minerals and Specimens of Economic Geology, to Sir W. E. Logan, Montreal; concerning products of the Forests and Waters, to Dr. Tache, Quebec, or Dr. Hurlburt, Hamilton; concerning Agricultural produce, to Hon. L. V. Sicotte, St. Hyacinthe, and Col. Thomson, Toronto concerning articles of Canadian Manufacture, to Dr. Beatty, Cobourg, or to the Secretary, Montreal, to whom also, communications on all other business of the Commission are to be addressed.

R. CHAMBERLIN, Com'r, Secretary.

Montreal, December 12, 1861.

## BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,  
Secretary.

Toronto, 1861.

## Notice of Co-Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

## NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada, will carry on the above business, wholesale and retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

## FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several pure *Durham* bull calves to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the well known *DUCHESS* tribe, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—First come, first served.

Waterdown, Nov. 14, 1861. 4-t.

## THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

JOHN SNELL,  
Edmonton, P. O., C. W.

tf.

**VETERINARY SURGEON.**

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

**FOR SALE.**

**A FEW PURE-BRED SOUTH-DOWN RAMS**  
and Ewe Lambs, from

**IMPORTED STOCK,**

Selected from the Best Flock-dealers in Dorset, Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

JOHN SPENCER,  
Brooklin, Post Office,

Oct. 12th, 1861. Ontario County C. W.

**THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**FOR SALE.**

**A**LOT of thorough bred ESSEX Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

**Contents of this Number.**

PAGE.

|                                                            |    |
|------------------------------------------------------------|----|
| The Early History of Agricultural Societies in Canada..... | 65 |
| Elodea Canadensis.....                                     | 65 |
| International Exhibition, 1862,.....                       | 66 |
| On Feeding Stock .....                                     | 66 |
| Flax Culture .....                                         | 68 |
| Products of the Hemp Plant.....                            | 69 |
| Stock Feeding.....                                         | 71 |
| Ergotized Wheat .....                                      | 74 |
| The Real Value of Artificial Cattle Foods..                | 75 |

**AGRICULTURAL INTELLIGENCE :**

|                                          |    |
|------------------------------------------|----|
| Meeting of the Board of Agriculture..... | 76 |
| Public Meeting—The Agricultural statute. | 77 |
| County Welland Agricultural Society..... | 83 |
| East Durham Agricultural Society .....   | 83 |
| Drainage.....                            | 84 |
| Judging of Cattle.....                   | 85 |

**HORTICULTURAL :**

|                                  |    |
|----------------------------------|----|
| The New French Roses.....        | 86 |
| Botanical Society, Kingston..... | 86 |

**THE DAIRY :**

|                    |    |
|--------------------|----|
| Butter Making..... | 87 |
|--------------------|----|

**THE POULTRY YARD :**

|                    |    |
|--------------------|----|
| Spanish Fowls..... | 87 |
| Poultry .....      | 88 |

**MISCELLANEOUS :**

|                                      |    |
|--------------------------------------|----|
| The Cerealia a Standing Miracle..... | 89 |
| Scientific Jottings.....             | 93 |
| Reminiscences of Smithfield.....     | 94 |
| Shoes,—The Cat and Sparrow.....      | 94 |

**The Agriculturist,**

**OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,**

Is published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
**Canadian Agriculturist,**

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, FEBRUARY 16, 1862.

No. 4.

**The Board of Agriculture.**

From the following official notice, which we cut from the *Canada Gazette*, it will be seen that the members of the Board of Agriculture of Upper Canada whose term of service expired at the commencement of the year, have been re-elected by the county societies—

*Bureau of Agriculture and Statistics.*  
Quebec, 14th February, 1862.

The following gentlemen have been elected members of the Board of Agriculture in Upper and Lower Canada for the present year.

UPPER CANADA.—R. L. Denison, Esq., E. W. Thomson, Esq., Hon. G. Alexander and Hon. H. Ruttan.

LOWER CANADA.—Dr. J. C. Taché, B. Pomroy, Esq., O. E. Casgrain, Esq., Hon. P. A. Archambault.

A. CAMPBELL,  
Acting Secretary.

**Fruit Growers' Association.**

We have to thank the able Secretary of the Upper Canada Fruit Growers' Association, D. W. Beadle, Esq., of St. Catharines, for the very interesting report of a recent meeting of the Association at Hamilton, which will be found in another portion of the Journal. We would beg leave to request particular attention to the series of questions addressed by the Association to Horticultural and other Societies and individuals, asking for informa-

tion in regard to the success attending the experiments made in the cultivation of the different varieties of fruit. Full and careful answers to these questions from all parts of the Province would be of great value and importance, not only to those who wish actually to engage more or less extensively in fruit culture themselves, but also to every one interested in the progress and amelioration of the Province.

**Address of Condolence to Her Majesty.**

The following is a copy of an Address of Condolence to Her Majesty the Queen, on the occasion of the deeply lamented death of His late Royal Highness the Prince Consort, drawn up in accordance with the resolution passed at the Convention of the Agricultural Association held in this city on the 30th January last, and which has been transmitted to His Excellency the Governor General, to be forwarded to Her Majesty.

TO THE QUEEN'S MOST EXCELLENT MAJESTY.

We your Majesty's most dutiful and loyal subjects, the Agricultural Association of Upper Canada, desire to offer to Your Majesty the assurance of our devoted attachment to your throne and person, and of our deep and respectful sympathy with your Majesty in the great affliction which has befallen your Majesty and the British nation in the early and lamented death of His Royal Highness the Prince Consort.

While we deplore in common with all our

fellow subjects in every part of the Empire, the death of a Prince so distinguished by rare intellectual gifts and eminent virtues, we feel that his loss will be more especially deplored by those Societies in our father land which, like this Association, have for their object the advancement of agricultural science.

To the distinguished patronage and enlightened judgment of His Royal Highness, was due much of the wonderful development and rapid progress which have so particularly distinguished British agriculture within late years.

Nor can we forget, that the Royal Agricultural Society of England has, by his lamented death, been deprived of the invaluable counsel and direction of a President, whose special knowledge of the subjects embraced within the sphere of the Society's labours, and varied acquaintance with the Industrial arts in general, rendered his presence in the chair of invaluable moment to the Society and the country at large, during this important year.

We would humbly express the hope, that the affectionate appreciation of His Royal Highness's many and exalted virtues entertained by all classes, and the loving sympathy of your Majesty's loyal subjects in this as in all other parts of your Majesty's dominions, may in some measure assuage the intensity of your Majesty's affliction. And we fervently pray that Almighty God may of His grace and goodness, support and comfort your Majesty and your Royal family, and that your Majesty may long be preserved to reign over the great Empire committed to your charge.

(Signed) E. W. THOMSON,

*President Board of Agriculture, Chairman.*

Toronto, January 30th, 1862.

### Flax Culture.

LONDONDERRY, Jan. 27th, 1862.

*To the Secretary of the Board of Agriculture.*

MY DEAR SIR,—Since my arrival in Ireland I was glad to find the prospects of the linen trade had very much revived. The very high prices cotton has reached within a few months no doubt was the cause of this, and the demand for flax, and desire on the part of the manufacturers for its cultivation in any country where they may be able to obtain it quite equal to last year, when I was here a little after this time. It was most fortunate we had not got the scutching mills the government had ordered before I came, as the Messrs Rowan Bro. & Co. have made a great improvement in them since, and they are now beyond a doubt the best mill, taking into consideration the saving in skilled labor, in Ireland. Parties have been here from Courtrie and tested them, and have ordered twenty of

them to be forwarded immediately. The six for Canada I hope to get shipped by the steamer of the 13th proximo, and will also endeavor if possible to get a hand sent with them or soon after who will understand setting them up and attending them. Too great efforts cannot be used to get the farmers to sow flax this season, the prices being at present and likely to be most remunerative. No effort should be wanting on the part of the active members of the Agricultural Societies throughout the country to encourage the farmers to sow all they can this coming spring, and it is well for those to know who may not be near a mill for a season or two, that as soon as they take the seed off, and have the straw properly dried on the grass, they may safely stack it up, put into any shed or barn, only keep it dry, and the fibre will improve the longer it is kept in this state, in truth for years. The prices too of Riga seed are advancing, from the great demand at present. It is worth in this market 43s. sterling per barrel of about 4 bushels, and it is expected it will be 50s. before sowing time. Should any one near Toronto wish to send for what they may require your enterprising townsman Rice Lewis, Esq., said he would import whatever he thought would be required for this spring's sowing; but parties in Guelph, Woodstock, and other places who have taken a lively interest in the cultivation of flax, intended when I left to forward an order here for what they wanted, and I would take care fresh seed was chosen for the purpose.

I am glad to say that it is thought here and in England that we will have no war.

The prospects for emigration this season much better than I expected.

Yours most truly,

JOHN A. DONALDSON,

*Canada Government Emigrant Agent.*

### Rowan's Flax Scutching Machine.

We give the subjoined wood engravings to represent this machine, several of which our government are about importing for the use of cultivators of flax in this province. We beg to refer to a communication from Jno. A. Donaldson, Esq., our energetic emigration agent in Ireland, on the subject in this number of our journal. The growth of flax will doubtless attract a largely increased share of attention this spring, and we shall make it a point to give all the information in our power on the subject. The subjoined description is from the *Mechanics' Magazine*, published in England.



## ROWAN'S MACHINE FOR SCUTCHING FLAX &amp;c.

This invention, introduced by Messrs. J. Rowan & Sons, of Belfast, consists in scutching flax, hemp, and other fibrous materials by means of a revolving cylinder fixed in a frame round which cylinder are placed combs and beaters, and to which the flax or other fibrous material is pressed by the hand through an opening provided for the purpose in the front of the machine. After having been sufficiently acted on, the flax is withdrawn and reversed end for end; this done, it is then put through the same operation, when it is finished. Sometimes rollers are used to pass the flax or hemp into the machine.

FIG. 1.

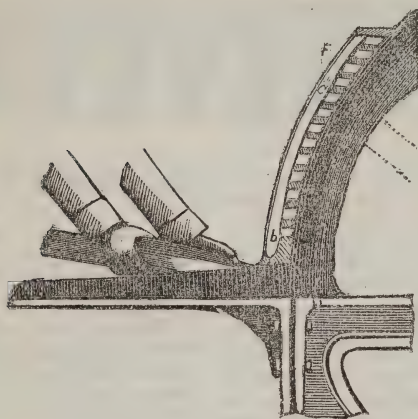


FIG. 2.

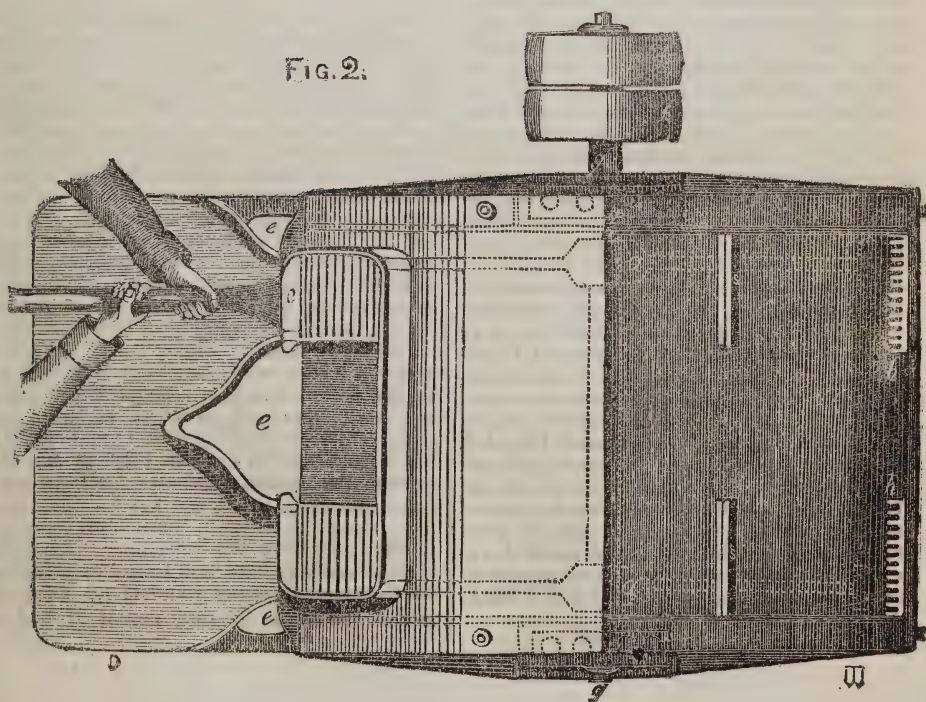


FIG. 3.



FIG. 4.



Fig. 1 of the accompanying engravings is a partial side elevation, and Fig. 2 a plan of the machine.

*a, a*, is the revolving drum or cylinder mounted on a shaft or spindle *g*, and fitted with a comb *h*, and with beaters *s, s*, round its periphery. One comb and five beaters, are found to act well, but the number of either may be altered. Figs. 3 and 4 are views on an enlarged scale in front elevation, and plan, of a comb detached. *B* is a side or framework enclosing the upper part of the drum; *C, C*, are louvre plates inclining downwards to allow of the broken boon or woody particles detached from the flax or other fibre under treatment passing off freely, and being blown down to the floor by a current of air passing from the cylinder through the louvres. The object of the louvres is to prevent the boon getting embedded with the fibre. *D* is the feeding board; it is made as shewn to enable the attendant to feed and handle the straw and flax during the operation with safety. A set screw is connected to the plate *b* for the purpose of regulating the distance thereof from the comb and beaters, which distance requires to be modified according to the nature of the fibres being operated on. *F* is the front plate of the louvre casings, *c, c*, are passages or channels by which the boon is led to the openings *e, e*, through which it falls to the ground; *ff* are fast and loose pullies mounted on the spindle *g*. The flax, hemp, or other material to be scutched is fed by the hands of an attendant to the drum or cylinder by means of the board *D*, and is submitted to the action of the comb and beaters; the material is allowed to pass on into the machine until one hand of the attendant comes nearly in contact with the front plate *F*, when the materials is withdrawn, turned upside down, re-inserted, and submitted to the same operation, and so on until it is sufficiently scutched.—*Mech. Mag.*

### Importance of Birds to Growing Crops.

20, DANIEL ST., BATH, Jan. 29, 1862.

To George Buckland, Esq., Professor of Agriculture, Toronto.

DEAR SIR,—In looking over my memorandum book the following slips respecting the usefulness of birds in destroying insects, cut from newspapers, is sent for your information. If the information be not in your possession, please give it a corner in the Upper Canada *Agriculturist*.

1st slip.—*Birds and Insects*.—At the late Agricultural meeting at St. Gallen, Switzerland, Baron Von Tschudi, the celebrated Swiss naturalist, dwelt on the important services of birds in the destruction of insects. Without birds, said he, no agriculture and vegetation are possible. They accomplish in a few months the profitable work of destruction which millions of human hands could not do half so well in as many years; and the sage, therefore, blamed in very severe terms the foolish practice of shooting and destroying birds, which prevails more especially in Italy, recommending on the contrary the process of alluring birds into gardens and cornfields. Among the most deserving birds he counts swallows, finches, titmice, redbills, &c. The naturalist then cites numerous instances in support of his assertion:—In a flower garden of one of his neighbours, the trees, all rose-trees, had been suddenly covered with about 2000 tree lice. At his recommendation a marsh titmouse was located in the garden, which in a few hours consumed the whole brood, and left the roses perfectly clean. A redbill in a room was observed to catch about 900 flies in an hour. A couple of night swallows have been known to destroy a whole swarm of grubs in 15 minutes. A pair of golden crested wrens carry insects as food to



their nestlings upon an average 36 times in an hour. For the protection of orchards and woods titmice are of invaluable service. They consume in particular the eggs of the dangerous pine spiders. One single female of such spiders frequently lay from 600 to 800 eggs twice in the summer season; while a titmouse, with her young ones, consume daily several thousands of them. Wrens, nuthatches, and woodpeckers often dexterously fetch from crevices of treebark numbers of insects for their nestlings.

2nd. As a proof of the valuable services rendered by swallows it is estimated that one of these birds will devour 900 insects in a day, and when it is considered that some insects produce as many as nine generations in a summer, the state of the air, but for these birds, may be readily conceived. One kind of insect alone might produce 560,970,489,000,000 of its race in a single year!

3rd. A gentleman in the County of Kent, England, writes thus:—I have excellent means of knowing that in various parts of the county, whole crops of fruit, vegetables, and grain have been swept off entirely by various kinds of minute insects, which the birds alone are competent to detect and destroy, and which not one man in a hundred knows anything about. Men see their hopes blasted, but they believe some ill wind has blown "a blight," for under that vague term they designate all such evils. In no localities have insects done so much injury to the fruit where birds are indiscriminately and systematically exterminated. The gardens in some localities are planted with plum trees. In 1858 they promised an extra abundant crop, but long before the fruit was matured the havoc of the winter moth, upon which the birds, especially the titmouse, feed, consumed almost the entire crop.

May not the foregoing statements relating to the interesting subject of protecting and encouraging the introduction of small birds into the growing and improving Province of Canada be a fit subject for the consideration of the Board of Agriculture? Perhaps a more favourable opportunity for procuring three or four species of birds will not again occur as at the forthcoming National Exhibition to commence in England next spring, where a great variety of birds will be collected, and all the bird fanciers and dealers in England may be consulted. The Commissioners deputed to proceed to England at the Exhibition, might be authorized to purchase and bring out some birds, to be let loose in the city of Toronto, where they would be protected for a while in the large gardens and pleasure grounds within the limits of the city, the increase would hereafter migrate through the country, and become exceedingly useful in the destruction of insects. The expense would be small, and the benefits arising from the introduction of the birds would be beyond any

present computation. Only one kind or variety should be placed in each coop, or cage, during the voyage. I am, Sir,

Your faithful servant,  
J. B. MARKS.

[It affords us much pleasure to insert the above very interesting communication from an old and zealous friend of Canadian Agriculture, who, though at present widely removed from us, continues to cherish an unabated interest in the welfare of this new country, in which for many years he permanently resided. We commend the subject of Mr. Marks' letter to such of our farmers and gardeners especially, as take a practical interest in those branches of Natural History to which it more immediately relates. Considerable success has already attended the introduction of several species of British birds into the Australian colonies; and if similar attempts were made in these parts of the American continent, due attention must be paid to the length and severity of our winters. The reckless destruction of birds is no doubt as impolitic as it is inhuman.—Eds.]

### Comminuted Food.

[From the Irish Farmer's Gazette]

Sir,—I am induced by your confessing in your issue of the 18th ult. "to feel great interest in the experiment" of using "comminuted food" to trouble you with my experience of the system. In 1860 I had, in every sense of the word, a very small turnip crop; but having a chaff-cutter and one of Bental's most excellent root pulpers, I determined to try the plan of giving the turnips pulped and the hay chaffed and mixed together to my stall-feds, numbering 20 beasts. Both machines were worked by manual labour, and the food prepared every day. So well pleased was I with the result that I made up my mind to erect a "one-horse gear," by which I would be enabled this year to work the two machines together, and on a much more extensive and more economical scale. The horse gear cost £10, exclusive of the expense of setting it up, which was trifling. 40 beasts are fed three times daily on the "comminuted food," besides 50 sheep that are fattening, and 8 farm-horses have their haychaffed. The cattle get all their hay through the turnips, except a little at night. It takes a horse about 2½ hours daily to do the entire work. The great advantages of the system are, firstly, from the ease with which the cattle consume the prepared food, additional time is gained between each feed for rest, besides the saving of muscular exertion necessary to enable a beast to get through a feed of whole swede turnips, which is

certainly considerable; secondly, the great saving of food, as there need never be a pound of waste; and thirdly, the increased facility afforded for consuming profitably the straw that can be spared from litter. Each of these advantages tends in itself to enable the farmer to keep more stock upon the same amount of food; for, owing to the first, cattle *unquestionably thrive more rapidly*; and, consequently, require shorter keep to prepare them for the butcher; the food saved from waste in the second; and in the third, from passing your straw through the chaff-cutter, and thereby using it in the most economical manner, you can do with less hay, and have more of your land free for stock in the summer months. There are other advantages I may mention. Cattle, stall-feeding, are never in danger from choking, and lambs and hogget cheep can eat the pulped roots freely. I am giving my stall-fed cattle a mixture of rape, bean and Indian meals, besides a little crushed oats daily, at a cost of 10s. per mouth. I have a portable 16 gallon boiler with steamer attached. The boiling water is put into a wooden vessel, and the Indian and bean meals stirred into it; as soon as the next boiler is ready, which very shortly occurs, it is poured on the previous mess, and the rape-meal added, and stirred for some minutes. This gruel is then carefully poured over the chaffed hay and bruised corn, thoroughly incorporated with them, by means of a three-pronged fork. The mess is then closely covered up for next day's use, and given at the noon feed, after about half allowance of roots. It is then blood warm, has a very fragrant smell, and is relished by the cattle. I think it a great advantage to use the boiling water. Last year I gave bean meal uncooked, and frequently observed it passed by the animals in their evacuations just as they had eaten it. I never perceive that now. Not having straw to spare this year from litter, I have not derived all the advantages I expect in future from my system. I commenced some time back to give my horses steamed turnips at night through thin chaffed hay and bruised corn. Previous to my doing so, they looked very poorly, though getting a full allowance of corn, and chaffed hay *ad libitum*. Since I have given the turnips they have thriven apace, and are now in a first-rate condition.—Yours, &c., A YOUNG TENANT FARMER.

### Professor Buckman on Meadows and Pastures.

[Lecture before the Farmington Agricultural Library, Berkshire, England.]

Professor Buckman said the subject which he was called to lecture upon to them that afternoon was the "Natural History, Economy, and Treatment of Meadows and pastures." The subject was so wide that it was impossible he could enter into its discussion in detail, because to do so

would be absolutely necessary to give some description of the anatomy and structure of grasses. On the present occasion he must leave out that portion of the subject, and give them some notion of the history, economy, and the different modes of treating meadow land. He would take it for granted that all farmers were fully impressed with the importance of the subject. When they considered how much of the land of this country was in pasture, and remembered the fact that "the man who made two blades of grass grow where only one grew before was a benefactor to his country," it behoved all of them to see whether they were making the best use of their meadow and pasture land—whether it was not possible to make more and better grass grow than heretofore. In arable cultivation they all knew that it had advanced so rapidly that, perhaps they now got something like double the produce they obtained from the same quantity of land fifty years ago; whereas in grass land it was generally admitted that they were rather behind, and that they did not do so well as they formerly did. There were a great number of reasons for this. The farmers had not studied the natural history of the grasses of which meadows were made. To compare England with other countries, they must come to the conclusion that the great glory of this island was its meadows and pastures; for there was no country in the world that could boast such meadows, but they were just beautiful and productive in proportion as they were cared for and attended to.

#### NATURE OF GRASSES.

In alluding to the changes which took place in meadows under different circumstances, he said that in adjoining parishes and districts there was evidently a great difference in the meadows, some being comparatively worthless, while others close at hand yielded a great amount of produce. If they looked at the nature of the grasses they would find them a most wonderful kind of plant. There were 150 species of grass in this country which adapted themselves to every circumstance, and just in proportion as they neglected the pasture would a great number out of those 150 begin to grow and take possession of the land; and as the greater number of our grasses were what was called sour grasses, the land became full of sour grass. On the other hand, when they found a good pasture, they would find it consisted of a few species of the right sort. The effect of care in cultivation was to kill the sour grasses. He could tell the condition of a pasture by the grass which was found upon it; those who studied the nature of grasses could tell not only the nature of the subsoil, but also the cultivation of the surface soil. Wherever they saw a quantity of wild barley, it was very prejudicial to the hayrick, as its long spikes or prickles so irritated the mouths of cattle that they could not eat, and consequently such hay was not only bad, but almost useless. It was found that long



broom grass always grew on limestone. He had seen a field where there was none of it growing except where some lime had tumbled down the side of the bank, so that by the broom grass they could tell where there was limestone with the greatest possible accuracy.

#### CULTIVATION OF MEADOWS.

With regard to the cultivation of meadows, he would premise by saying that they required cultivation as much as arable land. There was not the same amount of work or expense required, but they must be cultivated, and an intelligent mind only could get the best out of them. It was too much to expect that pastures would yield a good produce spontaneously, without wanting anything done to them: what would occur if left to themselves? The birds would carry haws, andsloes, and other seeds, and the pasture would become a wild jungle. The only got their beautiful meadows by dint of careful cultivation. But generally they were not carefully enough cultivated, and he would point out the following conditions necessary to the proper cultivation of meadows:—If any one acquainted with the grasses would go over a meadow, he would soon find out whether it was dry or properly drained. If he found a quantity of those “bullpates,” as they are called, or large hassocks of grass, there there must then be a quantity of water, and if the land were drained all that would die out very quickly. There were a great number of grasses which could only grow under wet conditions, and as soon as the land became dry they died out as quickly as possible, leaving only a blade here and there, and then, supposing the drainage to get out of order, they would immediately see these single blades multiply, and the meadow resume its former state. With reference to irrigated meadows, most of them knew that a very great increase was given to the yield of pastures in this country by letting the water run over them wherever circumstances permitted it. In order to do this properly they must have plenty of water, and facilities by which that water could be got upon the meadow, and equal facilities for getting it off again. The meadows should not be flooded, but the water should run over it so that it would percolate through the roots of the grasses. Wherever this was done, the results were extraordinary, and land which would not be worth £1 an acre was made worth £5 an acre. If the water were allowed to stagnate after the flooding, and they had not proper drainage, then they would have the evil results of the growth of sour grasses. The man who was called “the drowner” ought to know when the water was perfectly drained off, as he would be sure to see these sour grasses increasing if it were not. Draining was as absolutely necessary for pastures as for arable land, but fewer drains would be required generally for the former than the latter; where they wanted to have anything like a perfect pasture, they should have nothing like stagnant water on the land. Ano-

ther important point was the rolling. Our pastures were only in a good condition when there was a uniform texture caused by the mixture of grasses. If the grasses were allowed to grow in patches here and there, then they began to grow wild, and like what was seen in the jungle. Rolling prevented this, and the more a pasture was rolled the better it became. There was nothing like exercise for it; and to prove this, he instanced Oakley Park, where the militia were trained day after day, and, instead of doing any mischief, they did an enormous amount of good to the pasture. It caused a mixing of the grasses, and they grew up together much more easily and evenly after such exercises as this. Harrowing was also a point that should be attended to, in order to prevent an accumulation of moss, and to clear away the decayed grasses which had been allowed to stop behind. If not, they would have a peaty kind of soil, which they should endeavour by all means to prevent, and where it existed to get rid of; for the grasses which grow in peaty soils were not the most nutritious, and therefore anything like a peaty condition, or decaying vegetable matter, should not be allowed on the meadow. Far better to take away all the grasses and sow new seed than to skim the land over lightly, and leave behind that which would produce peaty conditions. There were some meadows adapted for pasture and pasture only, and were not satisfactory for making hay. Only a few years ago he was on the estate of Mr. Barker, of Gloucester, and in taking a ramble across the country, in the Home Park, he met with a quantity of grasses, of which he took the name, and Mr. Barker asked him what he thought of the value of the land, and he told him it was exceedingly good for pasture, but not for hay-making. Mr. Barker said it was very curious that his own bailiff should tell him that from practical experience, and that he, (Professor Buckman) should tell him the same thing from examining the grasses. There were a number of species of grasses, the hay of which would not be nutritious. Some had long spikes when full grown, like barley and wheat, and this was always objectionable in hay, so that here one was enabled, merely by the grasses, to point out something of practical importance.

#### FOLDING ON MEADOWS.

With regard to the amelioration of pasture by “folding,” he would make a few remarks. This was a subject to which he had paid particular attention. If they went on constantly feeding from a meadow with cows or sheep, and did not take hay from it, it would, under such circumstances, be very slow, indeed, to deteriorate. In fact, farmers very generally conclude that letting sheep upon the pasture was the way to revive it, however much deteriorated before. Year after year some carted away hay from the meadow, and returned no manure, but to compensate for that, they folded sheep upon it, as there was

some sort of notion that there was a great virtue in sheep to restore pastures. There was no innate virtue in sheep to do this, but there was a virtue in time—time allowed portions of the grass to be decomposed, and fresh food was thereby given for the other grasses to grow upon. It was quite true that sheep-folding did an amount of good, but the sheep added no new food, and it was folly to say that they added manure. What they did was simply this; they returned that grass which they ate, in a new form, and in that form it was food, but there was nothing new added. If they constantly fed cows upon meadows in that way, it would for a time get better than what it had been, but it would eventually get worse, and he would give an instance of this:—In Cheshire, where a most remarkably good cheese was made, he found ten years ago the meadow full of rushes and sedges, grasses with hollow and triangular stems, and exceedingly rough pasture. Sedges grew for the most part in wet sands. He found that the people had been constantly exporting an immense amount of cheese and the flesh and bones of cattle, and the result was that the meadows were constantly getting poorer. The phosphate had been taken out of the land and converted into the bones of the cattle, and then the sedges came up in the impoverished condition of the land, and replaced the true grasses, which required better food. In order to remedy this, the farmers in Cheshire—which is a great country for salt—put a quantity of salt over the meadows, and this killed every one of the rushes and sedges; and, as soon as the salt had dissolved the frame-work of these grasses, this formed a kind of manure, and refreshed the pasture again. But this refreshment was very much like that which was given by folding sheep—nothing new was added; they got no new conditions, and the meadows gradually relapsed into the same poor condition. But the Cheshire farmer now, to compensate for the bones and flesh which had been sent off the meadows in his cattle, was bringing back a compound containing similar materials—a guano which contained bone-dust in great quantities, and also a large amount of superphosphate, and they were using this to a larger extent than any other county in England, and the result was that the pastures were becoming thoroughly restored. Here, then, was the true theory of sheep-folding. They might bring a meadow into a certain condition by feeding sheep upon it, but it would not always remain in that condition. Whatever they took off it in the shape of mutton was so much impoverishment of the land. Whenever they wanted to restore a pasture in a very bad condition, they might very readily do it by taking the sheep from the turnip field towards evening, and folding them on the meadow the whole of the night. Then the sheep would bring something from the turnips, and add to the meadow new manure. There was no question they would do an enormous amount of good in that way.

#### HAY MAKING.

As regarded hay-making, they would get hay in quality and quantity just in proportion to the manure they put upon the soil. And if they took away hay, they must return something more than merely folding sheep upon the land in the usual way, otherwise the meadow would become impoverished. He would caution the farmers against letting the hay grow too long before making it. He was often told that there was no hay to make, and they must let it grow three weeks or a fortnight longer, in order to get a greater quantity. But, depend upon it, this was unwise. They should not let the grasses seed on any account. If they had not sufficient quantity previous to this, he did not think anything would increase it; but even if it did increase, the injury they would do to their pasture would be more than any benefit they would derive in the increase of hay.

*To be continued.*

#### Horticultural.

#### The Fruit Grower's Association of Upper Canada.

This association held its Annual Meeting in the City of Hamilton, on the 22nd and 23rd January 1862, which was very fully attended.

The President read a very interesting address on the objects and importance of this association.

On motion of D. W. Beadle, seconded by W. Holton, the thanks of the association were tendered to the President for his able and interesting address, and he was requested to furnish a copy for publication in the *Canadian Agriculturist*.

(A copy of the Address is subjoined.)

On motion of D. W. Beadle, seconded by Mr. Arnold, Mr. George Leslie was appointed a committee to obtain the publication of the President's address in the *Leader and Globe*, Toronto.

The association then proceeded to the election of officers for the ensuing year, with the following result:

*President*.—Judge Logie, Hamilton.

*Vice-Presidents*.—George Leslie, Esq., Toronto.—Alexander Leslie, Esq., London.

*Secretary and Treasurer*.—D. W. Beadle, Esq., St. Catharines.

*Fruit Committee*.—Messrs. Gray, Meston, Holton, Freed, and Laing.

*Publication Committee*.—The Secretary, and Messrs. Bruce and George Leslie.

Answers had been returned to the questions issued by the association from over thirty different parties, and these were now read by the Secretary.

After the reading was finished, on motion of Dr. Harburt, seconded by George Leslie, the



answers were all referred to the Secretary, with instructions to prepare a condensed report therefrom, and to submit the same to a special meeting to be held in the City of Hamilton, on the 20th of February, at 2 o'clock P.M.

On motion, the society now adjourned to meet at 9 o'clock, to-morrow, 23rd instant.

On re-assembling pursuant to adjournment the association took up the consideration of the Constitution and By-Laws, in accordance with the action had at the last January meeting and adopted the following,

### CONSTITUTION AND BY-LAWS

ART. I.—This Society shall be called "THE FRUIT GROWERS' ASSOCIATION OF UPPER CANADA."

ART. II.—Its object shall be the advancement of the Science and Art of Fruit Culture, by holding Meetings for the exhibition of Fruits, and for the discussion of all questions relative to Fruit culture; by collecting, arranging and disseminating useful information, and by such other means as may from time to time seem advisable.

ART. III.—The Annual General Meeting of the Association for the election of Office-bearers, shall be held in the city of Hamilton on the third Wednesday of January. Two other general Meetings shall be held at such places as shall be determined at the January Meeting, one on the third Wednesday in July, and the other on the second Wednesday of November, in each year.

ART. IV.—Its officers shall consist of a President, two Vice-Presidents, a Secretary and Treasurer, who shall be chosen by ballot, after nomination.

ART. V.—There shall be a general Fruit Committee, consisting of five members of the Association, to be appointed at the Annual Meeting in January, of whom three shall form a quorum.

ART. VI.—There shall be a Committee on Publication, consisting of not less than three members, who shall be chosen at the Annual Meeting in January.

ART. VII.—Any person may become a Member by an annual payment of One Dollar; and a payment of Ten Dollars at one time shall constitute a Member for life. The Presidents of all Horticultural Societies shall be, *ex-officio*, Members of this Association.

ART. VIII.—This constitution may be amended by a vote of a majority of the members present at any regular meeting—notice of the proposed amendments having been given at the previous meeting.

BY LAW 1.—The General Fruit Committee shall thoroughly investigate the subject of Fruit culture. It shall collect such useful and interesting information in reference to this subject it may be in its power, and accompany the same

with an Annual Report to the Association at the November Meeting.

2.—The Committee on Publication, to whom all the Reports of the Fruit Committee shall be referred at the November meeting, shall examine these Reports, and embody the information they contain in a general Report, to be submitted to the Annual General Meeting; and, after approval, cause the same to be printed in pamphlet form, for distribution among the Members.

3.—There shall be an exhibition of Fruits, and a discussion upon their properties, at each regular Meeting.

4.—The annual Subscription shall be due in advance, at the Annual January Meetings.

5.—The President, (or, in case of his disability, the Senior Vice-President,) may convene Special Meetings at such times and places as he may deem advisable; and shall convene such Special Meetings, at any time, on the written request of five Members.

6.—The President shall deliver an Address on some subject relating to the objects of the Association at the Annual General Meeting, and nominate members to fill any vacancy occurring in any office during the intervals between the Annual January Meetings.

7.—The Treasurer shall receive all moneys belonging to the Association, keep a correct account thereof, and submit the same at each January Meeting.

8.—A Committee of two shall be chosen at the November Meeting to audit the account of the Treasurer.

It shall be the duty of the Secretary to keep a record of the proceedings of the Association, conduct the correspondence, give not less than ten days notice of all Meetings to the Members; and specify the business of Special Meetings.

10.—At Special Meetings no business shall be transacted except that stated in the Secretary's circular.

11.—The order of business at the Annual Meetings in January shall be—1st, reading of Minutes; 2nd, reading of Reports of Officers and Committees; 3rd, delivery of Address by the President; 4th, Election or Appointment of the Officers and Committees; 5th, Miscellaneous Business.

12.—These By-Laws may be amended at the Annual January Meetings, by a vote of two-thirds of the Members present.

On motion of J. Bruce, seconded by Mr. Arnold, it was

*Resolved*,—That whereas Canada West is naturally one of the finest Fruit-growing countries in the world, and whereas it is desirable to offer every inducement possible to the development of this source of our wealth, therefore this association do suggest to the Board of Agriculture, that it is very desirable to increase considerably the premiums offered for "Horticultural Products," with a view of stimulating this branch of industry.

The secretary was requested to prepare from the Minutes of the Association, a list of the Fruits recommended for *general cultivation*, and of those recommended for further trial, and cause the same to be printed in the Canadian *Agriculturist* and other leading papers.

In obedience to this request the Secretary prepared the following :

LIST OF FRUITS RECOMMENDED BY THE  
UPPPER CANADA FRUIT GROWERS'  
ASSOCIATION.

APPLES

*For General Cultivation.*

Baldwin, south of the G. W. R. and Lake Ontario; Duchess of Oldenburg; Early Joe—as a dwarf for gardens; Early Harvest; Esopus Spitzenburg; Fameuse, or Snow-Apple—especially in the colder parts; Fall Pippin; Golden Sweet; Gravenstein; Golden Russet, as the best Russet; Hawthornden; Keswic Codlin; Northern Spy; Pomme Grise; Red Astracan; Rhode Island Greening, in the vicinity of the Lakes; Ribston Pippin; Roxbury Russet, for its long keeping qualities; Rambo, in suitable localities; St. Lawrence; Talman Sweet.

*For further Trial.*

Benoni; Belmont; Beauty of Kent; Colvert; Dominic; Fall Janetting; Jersey Sweet; Porter; Primate; Sweet Bough; Summer Rose; Swaar; Twenty Ounce Apple; Wagener; Westfield Seek-no-further.

PEARS

*For General Cultivation.*

Bartlett, south of the G. W. R. and Lake Ontario; Belle Lucrative, on quince stock; Flemish Beauty, on pear stock; Louise Bonne de Jersey, particularly on quince stock; Made line; Seckel; Tyson; White Doyenne.

*For further Trial.*

Beurre Giffard; Beurre d'Anjou; Duchess d'Angouleme; Osband's Summer.

CURRENTS

*For General Cultivation.*

Black English; Black Naples; Cherry; Red Dutch; Victoria; White Dutch; White Grape.

*For further Trial.*

Ogden's Black Grape; Prince Albert; Red Russian.

STRAWBERRIES.

*For General Cultivation.*

Burr's New Pine; Jenny Lind; Wilson, for market.

*For further Trial.*

Hooker; Monroe Scarlet; Trollope's Victoria; Triomphe de Gand.

RASPBERRIES

*For General Cultivation.*

Franconia; White Antwerp.

*For further Trial.*

Brinckle's Orange; Belle de Fontenay; Fastolf; Knevett's Giant.

GRAPES

*For General Cultivation.*

North of Lake Ontario and G. Trunk Railway; Clinton.

*For further Trial.*

Concord; Diana; Delaware; Hartford Proflice; Rebecca.

It was resolved that the association do hold its July meeting for 1862 at the town of St. Catharines, and its November meeting for 1862 at the city of Toronto, in consequence whereof the meetings for 1862 will be as follows:

On the 16th of July, at the Town of St. Catharines.

On the 12th of November, at the City of Toronto.

And it was also decided that at the next meeting in July, the association will discuss and determine the varieties of cherries, plums, and gooseberries best suited to our climate.

The association then proceeded to the discussion of grapes, as follows:

CONCORD GRAPE.

*Mr. Bruce*,—Had seen it only at Hamilton, it promised to be one of our favorite grapes.

*Mr. D. Murray*,—Is one of the most hardy; a fine berry and bunch, free from mildew, retains its berries, perfectly ripe on the 6th September for the last two years on open trellis, flavor superior to Isabella, is a strong free grower, ripens the wood well to the end of the shoots.

*Mr. Laing*,—Considered it one of the best, is hardy, and earlier than the Isabella.

*Mr. Arnold*,—It is perfectly hardy without protection, do not find it a strong grower nor great bearer, it ripens about a week before the Isabella, very pulpy with strong musky flavor and odor.

*Dr. Hurlburt*,—It bears well, ripens early, very little earlier than the Isabella, perfectly hardy, is grown by me on west side of building.

*Mr. Brennan*,—Is a valuable variety, good and hardy.

*Mr. Holton*,—The vine is quite hardy, a strong grower, think they did not ripen with me much earlier than Isabella, but the vine was neglected.

*Mr. A. Leslie*,—Has not fruited it, vine is hardy.

*Mr. G. Leslie*,—It ripens well in Toronto, is hardy and productive.

*Mr. Beadle*,—It ripens a week or ten days earlier than the Isabella, is very hardy and seems to be patient of abuse, neglected plants bearing good crops and ripening well.



**Mr. Freed**,—Considers it the handsomest and best black grape cultivated; ripe 25th Sept.

## CANADIAN CHIEF.

**Mr. Murray**,—Have had it planted for five years; it mildews badly and has not ripened a bunch; do not think it sufficiently hardy for Canada.

**Mr. Arnold**,—Have had it six years in open air, it is a fine grower, is liable to mildew, as indeed do all varieties both native and foreign with me, the fruit scarcely ever ripens.

**Mr. Freed**,—It is more subject to mildew than any other variety, is two weeks later than the Sweet Water, have had it twelve years but cannot get any fruit in the open air.

**Mr. McNab**,—It is too tender, cannot fruit it.

**Mr. Brennan**,—Have had it to bear well three years in succession, it will do in a pet spot, and needs careful cultivation. It is not suitable for Canada generally.

**Mr. Geo. Leslie**,—Have had it six years in a good location but it does not ripen, is very subject to mildew, and not suitable for out door culture.

## DELAWARE.

**Mr. Murray**,—Small bunch and berry, weak grower, abundant bearer, wood very short-jointed and very hardy, one of the finest flavored grapes, ripens about the middle of September or ten days before Isabella.

**Mr. Freed**,—A slow grower and small berry, but fine flavored.

**Mr. Arnold**,—Vine perfectly hardy, a moderate grower, have not yet fruited it.

**Dr. Hurlburt**,—Vine hardy, fruit very high flavored.

**Mr. Holton**,—Hardy, slow grower, have not yet fruited it, but have tasted the fruit raised in Hamilton and found it of fine flavor.

**George Lestie**,—One of the hardiest, have not yet fruited it.

## DIANA.

**Mr. Murray**,—It ripens a week before the Isabella, is a fine grower, hardy, bunch smaller than Isabella, but flavor better.

**Mr. Campbell**,—Have seen it in Woodstock in a very favourable locality, during the last days of September, but it was green, quite unripe.

**Mr. Freed**,—Find it to be a good grower, and am well pleased with it so far.

**Mr. Arnold**,—Produced some fine clusters that had kept very perfectly. It is a favorite with me, one of the best growers, flavor next to the Delaware, berry and bunch larger. It improves on acquaintance, some berries on the bunch ripen before the rest; the average time of ripening ten days earlier than the Isabella; do not think the vine is quite as hardy as the Concord, but is quite as hardy as the Isabella.

**Mr. Holton**,—Have fruited it for two years, and find it perfectly hardy; flavor almost as high as the Delaware; ripens earlier than the Isabella, about at the same time with the Concord.

**Mr. Geo. Leslie**,—Is one of the best yet introduced—a great favorite about Toronto, comes the nearest of any to the Delaware in flavor, and ripens two weeks before the Isabella.

## REBECCA.

**Mr. Murray**,—Is the best hardy white grape, bunch a little larger than the Diana, berries medium size, flavor preferable to the Isabella and equal to the Diana, ripens two weeks before the Isabella.

**Mr. Arnold**,—Is the best hardy white grape, have not yet seen any mildew on this, but expect to, as all varieties seem subject to mildew with me, improves as the vine becomes older, flavor equal to Diana, and it ripens about the same time.

**Mr. Holton**,—I have not fruited it, but find the vine to be perfectly hardy, a moderate grower, and that it ripens its wood early.

## CLINTON.

**Mr. Campbell**,—Have seen it in nearly every county of the Province, it is perfectly hardy, an early and abundant bearer, bunch medium size, berries small, ripens every season, frosts only improve the flavor which is harsh until frost comes, and the fruit keeps well until February.

**Mr. Murray**,—Is perfectly hardy but flavor of second quality.

**Mr. Freed**,—It may be an excellent grape for the North, but not desirable where the finer varieties can be grown.

**Mr. McNab**,—Find it a sure crop every year; by thinning out the berries are very much increased in size, and the flavor is improved by allowing them to hang until frost comes.

**Mr. Alex. Lestie**,—Is hardy and vigorous, and a good fruiter, often ripens irregularly, there being many green berries, flavor second quality, the fruit keeps well.

**Dr. Hurlburt**,—It is very hardy, a good bearer, and the fruit improves in quality by culture.

**Mr. Arnold**,—Is well calculated for the north, perfectly hardy, but not desirable where finer varieties can be successfully grown.

**Mr. Holton**,—It is exceedingly valuable for the north, is the most valuable of any for Canada generally.

**Mr. Geo. Leslie**,—It is the very grape for the northern townships, will yield a good full crop every season where no other crop can be grown.

**Mr. Beadle**,—It keeps the best of any of the grapes so far as my experience goes, retaining its freshness and sprightliness, while the others are heavy and dead.

## ISABELLA.

*Mr. Campbell*.—It sometimes freezes down, can't say that I have seen any ripe in Canada, it colors long before it ripens; it is a free grower and abundant bearer.

*Mr. Murray*.—It ripens in favourable seasons, but is not to be depended on.

*Mr. McNab*.—It is not worth while to trouble with it at Hamilton, some of the seedlings from it ripen about 25th Sept., but they require good cultivation.

*Mr. Alex. Leslie*.—It ripens pretty well at London, but is improved after a little frost, it mildews as bad as any.

*Mr. Arnold*.—It always colors with me, (Paris) but only in one or two seasons have I known it to get ripe.

*Mr. Beadle*.—On the gravelly soil of St. Catherine's it generally ripens, but in less favored positions in my vicinity it very frequently fails to do so.

*Mr. Geo. Leslie*.—It is an old favorite in Toronto, and on the whole is one of the best we have; it ripens if the frosts keep off; shelter and situation are everything; the wood is rather tender.

## CATAWBA.

*Mr. Campbell*.—Has never seen any ripe in Canada.

*Mr. Murray*.—Thinks he saw some ripe this season, but that it is not suited to Canada.

*Mr. McNab*.—Will not often ripen in Canada, except in the extreme south end.

*Mr. Alex. Leslie*.—Does not ripen at London.

*Mr. Arnold*.—Is not worth cultivating, have rarely seen it colored even at Paris.

*Mr. Beadle*.—It ripened in St. Catherine's once in many years, and that only in favourable locations.

*Mr. Geo. Leslie*.—Too late in ripening for Canada generally.

## SWEET WATER.

*Mr. Campbell*.—Is tender, very subject to mildew, not a good bearer, ripens some seasons.

*Mr. Murray*.—Should be planted only in the granery.

*Mr. McNab*.—Have had it 18 years, never ripened more than a few bunches.

*Mr. Alex. Leslie*.—Have tried it for 6 years, but never had any fruit.

*Mr. Freed*.—Had some fine fruit last year, but have seen it mildew badly this same season on older plants.

*Mr. Laing*.—It is too tender for out-doors.

*Mr. Arnold*.—Have not found it more liable to mildew than other varieties, it bears good crops every year with me.

*Mr. Holton*.—It is quite too tender.

*Mr. Beadle*.—Have long ago discarded it as comparatively worthless.

*Mr. Geo. Leslie*.—If kept free of mildew it ripens very well, but it is tender, and requires a good aspect and careful protection.

## NORTHERN MUSCADINE.

*Mr. Arnold*.—It is as hardy as the Clinton, have not yet seen any mildew on it, while other varieties around it were all mildewed, the berry is of good size, though very liable to drop from the bough as soon as it is ripe, bunch small, flavor sweet, very musky, ripens as early as the Isabella.

## HARTFORD PROLIFIC.

*Mr. Murray*.—Is one of the earliest grapes, next to the Delaware in flavor, berry and bunch above medium size, a strong grower, very hardy, ripens about the 1st September; berries are apt to drop from the bunch.

*Mr. Arnold*.—Is the earliest American grape I have, a good grower, hardy, flavor about equal to the Concord or a well ripened Isabella.

*Mr. Holton*.—Have found the vine perfectly hardy, a good grower, have not yet fruited it.

*Mr. Beadle*.—An excellent variety, that promises to ripen well in a large part of Canada, earlier than Concord and nearly, but not quite, equal to it in flavor; perfectly hardy thus far, stood the past winter unharmed when an Isabella by the side of it was cut down to the ground.

*Mr. Geo. Leslie*.—One of the most promising grapes we have, earlier than the Concord and superior to it in flavor.

## PROTECTING GRAPE VINES.

*Mr. Brennan*.—Recommend that all grape vines be covered to protect them from injury by rapid thawing and freezing, use coarse litter from the stable, only a light covering.

*Mr. McNab*.—Uses evergreen branches and corn-stalks.

*Mr. Geo. Leslie*.—A light covering of earth.

*Mr. Freed*.—Would use some clean material, have found material from stable to cause mildew in the wood.

*Dr. Hurlburt*.—Covers with boards.

*Mr. Arnold*.—I use pea straw, covered lightly with earth.

*Mr. Beadle*.—Where snow lasts all winter, merely laying them on the ground so that they will be covered with snow, will be quite sufficient.

On motion of Dr. Hurlburt, seconded by Mr. Freed, it was *Resolved*, that this association recommends that all varieties of the grape be laid down and protected by a light covering during the winter and early spring.

On motion of D. W. Beadle, seconded by Mr. Holton, *Resolved*, That this association recommends the following varieties of grape as giving promise of being better adapted to the climate and soil of Canada than any other with which we are acquainted; viz., Hartford Prolific, Concord, Diana, Delaware and Rebecca.

On motion of W. Holton, seconded by J. A. Campbell, *Resolved*, That this Association recommends the Clinton grape as well adapted for



general cultivation in the colder parts of Canada West—north of Lake Ontario and the Grand Trunk Railway.

The Association then adjourned.

#### SPECIAL MEETING,

Of the Fruit Growers' Association of Upper Canada, held at the City of Hamilton on Thursday February 20, 1862, for the purpose of considering the Report of the Secretary on the answers sent in reply to the questions issued by the Association.

The President being absent, Mr. Holton was called to the Chair.

The Secretary reported that he had prepared an abstract from the answers sent to the association in such a manner as to arrange the information under the head of each county, naming the parties, with their residences, who had responded; that replies had been received from 16 counties, that 26 counties yet remained to be heard from, that of the counties from which replies have been received, very many are from one locality in the county; and suggested the propriety of requesting all the newspapers in the Province disposed to further the interests which this association is designed to promote, to publish the questions issued by the association, and call the attention of their readers to the importance of giving the desired information.

On motion of Mr. Laing, Seconded by Mr. Meston.

**Resolved:** That the abstract prepared by the Secretary remain in his hands until the next regular meeting, and that the Secretary be requested to have the questions published in as many papers throughout the Province as may be willing to insert the same gratuitously.

On motion adjourned.

### The President's Annual Address, delivered before the Fruit Growers' Association of Upper Canada,

By His Honor, Judge LOGIE.

GENTLEMEN,

Before retiring from the office which I have had the honor of filling during the past year, it is my duty to address a few remarks to you, and in the infancy of this society I think I can best advance its interests by directing attention to the objects of the association and its importance not only to the Horticulturist and Fruit grower, but to the general interests of the country, and by stimulating you to increased efforts for the accomplishment of these objects by reminding you of what you have accomplished during the past year, and shewing how successful other societies of a similar nature have been.

The objects then contemplated in the formation of this Society, and which we have been during the past year and are now endeavouring to carry out are,

*First.*—The discussion by members of the Society of the relative merits of the different kinds and varieties of fruit, the determination and selection of the best varieties suitable for cultivation in Canada West, and the publication of the list of fruits so selected and recommended.

*Second.*—The revision from time to time as occasion may require of the Catalogue of fruits, and the addition thereto of such new varieties as may after a sufficient trial be deemed worthy of general cultivation, and striking out the names of any that may on further trial be found unworthy of cultivation, either from being deficient in flavor or not sufficiently hardy to stand the severity of our climate.

*Third.*—The promotion by the society of the cultivation and improvement of native and indigenous fruits, the testing of all new varieties of fruit, the discussion of their merits or defects, and making known the result of such trials.

*Fourth.*—The determination of the names of fruits; and the identification of fruits having different names in different localities, or which, having received new names through the ignorance or fraud of cultivators, have been distributed as new varieties.

*Fifth.*—The discussion of all questions relative to Fruit culture, and disseminating information respecting the same, such as the most proper or most advantageous modes of cultivation, the soils and exposures most suitable for the different kinds of fruit, the manures most beneficial and the best modes of applying the same, the diseases to which the various fruit-bearing trees, shrubs, and plants are liable, with the remedies for such diseases; the insects injurious to the different kinds of fruit, and the best means of preventing or restraining their ravages; the best modes of ripening, gathering, and preserving fruits; and any other subject bearing upon fruit culture.

The importance of these objects is apparent to all who have given their attention to the subject, but the great mass of the people have not given the matter any consideration and are not likely to become aware of the importance to their interests of this Society unless their attention is specially directed to the subject.

No intelligent farmer or intending Fruit-grower would plant an orchard without endeavouring to procure the best varieties suitable to the climate, but with every care on his part he will meet with frequent disappointment (as every one who has engaged in Fruit-culture can testify.) Some of the varieties may turn out to be of inferior quality, for it sometimes happens that a fruit which attains a high degree of perfection in one locality, may prove very inferior in another place where the temperature is a few degrees higher or lower; or a variety of fruit of superior flavor and most desirable for cultivation may prove too delicate to withstand the severity of our climate. To all such as desire to have the *best varieties* of fruit the benefit of such a society as this will be manifest; for, although the dissemi-

nation of information by this Society, respecting the qualities and hardness of fruits, cannot prevent fruit growers from being occasionally disappointed, yet it must be the means of greatly lessening the number of such cases. And if all who have had experience in fruit culture would join the Society and engage in its deliberations much more certain results would be attained, and much greater reliance could be placed upon the list of fruits recommended by the Society.

A large proportion, however, of the farmers of Canada, when they make up their minds to plant an orchard, instead of going to a respectable and responsible nurseryman and obtaining from him *good varieties* of fruit in *good condition*, take from some travelling fruit pedlar or pretended agent for the sale of trees, whatever he may happen to have on hand, and upon his recommendation only. As he has probably bought a stock of trees, and sometimes only the *refuse trees* of a nurseryman's stock solely for the purpose of selling again and *must* sell what he has, whether they are good or bad, suitable or unsuitable to the climate and locality, his interest clearly is to get rid of his trees as fast as possible. The interest of a nurseryman, on the contrary, is to give satisfaction to those who deal with him, as his character and business prospects depend upon his giving such satisfaction. It is not surprising that trees bought in the way I have mentioned from travelling agents and fruit tree pedlars should turn out badly, that a large proportion do not survive, and those which do, turn out to be comparatively worthless; what is surprising is that careful men who would not sow a field with wheat without endeavouring to obtain the best and most suitable kind for seed, or who in raising stock would get the best that their means allow, are careless and indifferent in a matter of such importance as the planting of an orchard. In the event of getting an inferior kind of wheat there is at the worst only the loss of the ground for one year, and if inferior stock is got there will be no loss, as even inferior animals can be sold in a year or two for as much or more than it cost to raise them; but when an orchard is planted with inferior or worthless fruit the case is very different, the use of the ground is in a great measure lost for perhaps 15 or 20 years; how important then is it to secure the best varieties and obtain fruit that will be worth hundreds of dollars annually, instead of having the ground occupied by trees the fruit of which will not pay the expense of gathering and taking to market.

The manner in which fruit trees are bought from tree pedlars and *pretended* agents, and the result of such purchases, is no imaginary case. I have only stated what has again and again been brought under my own notice in the Division Courts in actions brought for the price agreed to be paid for the trees. I trust that this Society and the publication of its proceedings and catalogue of fruits may be the means of preventing

farmers from purchasing trees from irresponsible people, and of inducing them to order the most suitable varieties from reliable nurserymen, or their *duly authorized* agents, who can be depended upon to deliver the kinds ordered in good condition.

As one of the objects of this Society is the naming and identifying of the different kinds and varieties of fruit, those farmers and fruit growers who are not acquainted with the names of the fruits they may have in their orchards, will by joining this Society, and bringing to the meetings specimens of the fruit, get the fruit identified and named by the members of the Society, most of whom are experienced cultivators and well acquainted with all the varieties in common cultivation.

I have to congratulate you upon the progress made by the Society during the past year. During the first year of its existence, owing in a great measure to the lamented death of its first President, the late Judge Campbell, of Niagara, nothing was done towards the accomplishment of the objects of the Society; but during the past year several meetings have been held for the discussion of the merits of the different varieties of fruit and their adaptability to this climate, and a list of fruits has been made and recommended which is complete as far as it goes, it embraces the varieties of apples, pears, currants, strawberries, and raspberries considered most desirable for cultivation in this country; the merits of the New Rochelle or Lawton Blackberry were discussed, and it was decided not to recommend it for cultivation. I hope that during the present sitting the best varieties of the other fruits, such as grapes, plums, cherries, peaches, gooseberries, &c. may be determined, so that before the planting season commences a complete list of all fruits recommended by the Society may be published. I think it is of particular importance that the subject of the best varieties of hardy grape should engage your early attention. A greatly increased interest has for the past few years been felt in the cultivation of the grape in the United States, and that interest is extending to Canada. A large number of the new varieties or varieties with new names are advertised by nurserymen, but little or nothing is known of them; the people generally only know the old varieties, such as the Isabella and Catawba, and perhaps the Sweetwater. And as the object in producing new varieties has been to produce a *hardy grape* that will *ripen early* and produce a fruit of superior quality to these old varieties, it is important to know in how far these objects have been accomplished in any of the new varieties, and to let the public know what varieties have on trial been found to be most desirable for cultivation in this country. In determining the varieties of grape most suitable for cultivation, greater care is perhaps required in coming to a conclusion, than in the case of any other fruit; the quality and flavor of the grape, and its value, particularly



for the manufacture of wine is so dependent upon the quality and nature of the soil, the exposure to the sun, the altitude at which it is grown, and the extremes of temperature to which the plant is subjected, that, as is well known, a vine which in one locality will produce grapes of a particular quality, will not produce them of the same quality in another locality even in the same neighbourhood, hence the necessity of caution in making a selection.

While the progress we have made during the past year should encourage us to persevere in carrying out the objects of the Society, we should also be encouraged to perseverance by remarking the success which has attended similar societies in the United States. In that country fruit growers' Societies have been eminently successful. I shall allude here only to the chief and important one, the American Pomological Society. I believe that society was instituted in 1848 or 1849, and its progress has since that time been most remarkable, its meetings have been attended by fruit growers and those interested in fruit culture from all parts of the United States and California; the discussions, addresses, and lectures have been most successful, and have attracted large audiences. The catalogue of fruits recommended by it have been found most useful and reliable, and it is taken as a standard authority on the qualities of fruit. That Society and others of a similar nature have given an impetus to the cultivation of the best varieties of fruit by diffusing a general taste for the science of Pomology, inspiring fruit growers with greater zeal and industry, and by promoting kindness and good feeling among those interested in the subject.

I have mentioned the importance of a society such as this to individual Fruit growers; it can be shewn to be of equal importance in a national point of view. It was stated by the Honorable Marshall P. Wilder, President of the American Pomological Society some two or three years ago, that it was not more than a quarter of a century since the establishment of the oldest Horticultural Society in the United States, and that the fruit crop of the country was not then deemed worthy of a place in the national statistics. It was also stated, I think, in the same year by Lewis F. Allan, in a lecture on the apple, delivered at New Haven, that after a careful computation he was convinced that the aggregate annual value of the fruit crop of the United States could not be less than \$26,000,000, (twenty six millions of dollars,) that ten counties alone in the State of New York gave an average of \$200,000 each, that Niagara County 25 miles square yielded \$250,000. The fruit crop of the State of New York he estimated as being worth annually \$6,000,000; of New England \$4,000,000; of Ohio \$3,000,000; of Pennsylvania and New Jersey \$3,000,000; of the Northwestern States \$4,000,000; and of the Southern States \$6,000,000. And the value of the fruit crop is constantly and steadily increasing, so great has

been the progress of fruit culture in that country in a few years.

I am not aware that any estimate has been made of the value of the fruit crop in Canada or that we have sufficient data from which to form an estimate. Whatever its value may be it cannot be denied that in Canada the cultivation of fruit has not received the attention which it deserves. While great progress has been made in the science of Agriculture, a progress which is perhaps second to no country in the world, a corresponding progress has not been made in pomological science: much remains yet to be done, and in view of the importance and value of the fruit crop of a country, as shewn by the statistics I have given, we should persevere in the work in which we are engaged, and thereby aid in increasing the resources and wealth of the country. I think we may confidently look forward to a success similar to that attained by the American Pomological Society, and other societies of a similar nature in the United States, and that like important results will follow our efforts.

There is a great pleasure to be derived from the meeting together of those engaged or interested in the prosecution of a scientific enquiry, particularly of any branch of natural science, and the interchange of ideas and opinions on the subject in which they are interested, which those only can fully appreciate who have engaged in such enquiries. And I am sure that all who have attended our meetings during the past year can join me in testifying to the pleasure we have felt in our mutual intercourse and interchange of opinions on a subject so interesting to us all as that of the cultivation of fruit.

In conclusion, I beg leave to express my sense of the honor conferred upon me by placing me in the position of President of your Society during the past year.

### Fruit Growers' Association.

*Series of Questions issued to Horticultural Societies, &c.*

#### THE FRUIT GROWERS' ASSOCIATION OF UPPER CANADA

Desirous to collect and circulate information relative to the production of the several kinds of fruits in the various parts of the Province, respectfully requests the several Horticultural societies, County and Electoral Division Agricultural societies, Township Agricultural societies, and all gentlemen interested in the subject of fruit culture, to cause answers to the following questions to be prepared, and sent to the Secretary, Mr. D. W. Beadle, at St. Catharines, C. W., on or before July 1st, 1862.

As the questions are all numbered, the answers may be numbered to correspond, and thus avoid writing down the question intended to be answered.

## QUESTIONS.

## APPLES.

1. What varieties would you recommend as most suitable to be planted in your locality? 2. What varieties are most profitable for market? 3. What varieties are the most hardy? 4. What varieties have been tried in your neighborhood and found too tender? 5. Are apple trees subject to any disease, or the attacks of any insects in your section, and if so what? 6.

## SEASON FOR TRANSPLANTING.

6 What season has been found most favorable for transplanting, spring or fall?

## DWARF TREES.

7. Have dwarf apple, pear, or cherry, trees, or either of them, been planted in your vicinity, and with what success?

## PEAR.

8. What varieties of pear would you plant in your section? 9. What varieties are most profitable in your locality for growing fruit for market? 10. Have any varieties been planted and found too tender for your climate, and if so what are they? 11. What varieties do you find to be the most hardy? 12. Are pear trees subject to any disease with you, or to the attack of any insect, and if so what?

## PLUMS.

13. What varieties of plums succeed best in your section? 14. Have any varieties been tried which proved too tender for your climate, and if so, which? 15. Which varieties would prove most profitable for growing fruit for market? 16. Is the fruit stung by any insect in your locality, thereby causing the fruit to fall prematurely, and if so what insect? 17. Is the tree liable to any disease, or to the attacks of any insects, and if so what?

## CHERRIES.

18. What varieties of cherries succeed best in your neighborhood. 19. Have any varieties proved too tender to endure your climate, and if so which are they? 20. What varieties can be profitably planted for marketing the fruit? 21. Are the trees subject to any disease, or to the attacks or any insects, and if so, what?

## PEACHES.

22. Can the peach tree be grown in your section, and if so, what varieties succeed the best.

## APRICOTS AND NECTARINES.

23. Can the apricot or nectarine, be grown in your section, and if so what varieties succeed the best?

## QUINCE.

24. Can the quince be grown successfully in your section?

## STRAWBERRIES.

25. What varieties of strawberry have been

found to succeed well in your neighbourhood? 26. What varieties would you plant for market?

## RASPBERRIES.

27. What varieties of raspberries have been found to succeed best in your locality? 28. What varieties do you recommend to plant in your neighborhood, for growing fruit for market?

## GOOSEBERRIES.

29. What varieties of gooseberries succeed best in your section? 30. Is the fruit ever covered with mildew? 31. Do you know any varieties that are exempt from mildew in your section? 32. Do you know any means of preventing the mildew, and if so, what?

## BLACKBERRIES.

33. Has the New Rochelle blackberry been tried in your vicinity, and with what success?

## CURRANTS.

34. What varieties of red, white, and black currants are most esteemed in your locality?

## GRAPES.

35. What varieties of grape have been planted in your section? 36. Have any of them proved altogether too tender for your climate, and if so, which? 37. Have any of them proved perfectly hardy, and if so, which? 38. Do any of them invariably ripen their fruit well every season, and if so, which? 39. Are there any vineyards planted in your neighbourhood, and if so with what varieties? 40. Any other information, pertinent to the subject, such as the character of the soil that predominates in the orchards of your section; the soil found to be most suitable to the several kinds of fruit, &c.

41. Do you know of any seedling fruit of merit in your vicinity? if so please give its history and description: kind, size, color, quality, time of ripening, growth of tree, &c., &c.

Editors of papers throughout the Province are requested to give the above one or two insertions, in order that there may be every opportunity afforded to make the information sought, as full as possible.

## The Culture of Asparagus.

Read by Mr. H. Shaw, Gardener to R. Juson, Esq., before the Hamilton Horticultural Club.

Mr. PRESIDENT and GENTLEMEN.—In attempting to write a few remarks on the culture and management of Asparagus, it is not required that I should go on to speak of the history of this vegetable. It is found a native plant on the sea shores of Britain. Asparagus has a perennial root and annual stalks, it has two varieties, the purple and the green. The purple is a larger kind, growing fuller and closer; although handsomer in appearance, it is not considered so good in flavour as the green. But to discuss varieties and their



is not my object here, but rather to give a few practical hints on the formation of an asparagus bed, and its management afterwards.

The first point is the selection of a suitable spot of ground. The asparagus likes deep sandy loam, and the ground should, at least, be trenched two and a half feet deep, laying in the bottom about eight inches of solid cow manure. Care should be taken that the whole of the ground is turned regularly, and no ribs left behind the trenches. When the required space is turned up in this manner lay on a good covering of well decomposed manure, taking care to keep the surface level as you proceed.

After the ground is thus prepared the next step is procure one or two year old plants from the seed; two year old plants are preferable because they will give asparagus one season earlier for table. The period at which all has been got ready, ought not to be later than the second week in April, if spring planting is preferred, and last week in October for fall planting. I have sowed asparagus seed in the first week in May in Canada, and planted the following October upon ground prepared as stated above, and in a part of Canada more rigorous in climate than my present locality, and I cut very fine asparagus from it the third year, fit for any table; but by planting two years old plants it can be used the second year after planting. Now as to planting the ground so prepared.

Asparagus is generally plowed in beds about four feet wide, thus giving three rows to the bed at eighteen inches from row to row, the side rows being six inches from the edge of the bed, and in the row fifteen inches from plant to plant. But no benefit is derived from close planting. I believe two feet from row to row and eighteen inches from plant to plant is preferable and will yield finer asparagus. In planting, the crowns should not be more than one and a half inches under the surface for the covering every season adds to the depth over the crown. The beds should always be kept free of weeds, and the surface kept loose and free, which greatly tends to the vigorous and healthy growth of the plants. This should be attended to throughout the whole season of its growth, more especially the first season after planting, and in the fall, when the stalks are fully ripe, and cut off, the bed or beds should be covered two or three inches thick with good rotten manure, and over all a covering of stable dung or some litter as a protection against frost. This is the finishing touch for the fall. In the spring the litter should be removed, and a good sowing of salt given regularly over the bed, and then a three pronged fork used to loosed the surface and mix all the short manure left on the bed. The alleys also should be forked up, throwing a little sprinkling

over the bed, which should afterwards be neatly raked.

Asparagus beds so prepared and attended to will last a quarter of a century. I have seen at Airthrey Castle, Stirlingshire, Scotland, asparagus beds which had been cut for a period of fifteen years, and looked as if they would stand other-ten years. I believe it the best maxim that whatsoever a man doth, let him do it well." It gives most satisfaction and rewards the individuals at the end. I think every person who has a few square yards of spare ground ought to have his asparagus bed, all the trouble and expense is the formation of his bed; after planting there is but little trouble and expense attending it. And amongst all the vegetables there is none more relished than the asparagus coming in use early in the season, when there is very little else can be had from open air growth. It is always furnished for the table of the rich, but it is also within the reach of the poor man who can commend a small patch of ground that he can call his own.

#### *For the Canadian Agriculturist.*

#### **Dwarf Apple Trees Again.**

I was just about to comply with the request made in last year's *Agriculturist* by Mr. Beadle, to say a few words about dwarf apple trees, when I received your last number, containing some rather severe, and, I think, unwarrantable strictures, from R. B. Werden, upon "the representations made by the nurserymen in their catalogues and books, that the dwarf apple will bear when it is a small bush, or like the dwarf pears." This Mr. W. pronounces "only a humbug, and done for the purpose of selling their trees." Many persons will no doubt look upon such a charge as calculated to excite the displeasure of all nurserymen, who have ventured to say a word in favour of the early bearing properties of the dwarf apple. But I am very much inclined to think that every Canadian nurserymen can afford to smile, and to impute Mr. Werden's disappointment in his dwarf trees to his former unsuspecting credulity, or to his ignorance of the requirements of the trees so bitterly complained of. "For the purpose of selling their trees" indeed! Now if Mr. W. knows this to be a fact, he perhaps can tell us of some nurseryman who has a surplus of genuine dwarf apple trees, upon the true paradise stock. I have never yet known such, and should be much obliged for the information, having long been under the impression that the demand was greater than the supply.

Now sir, I shall venture to predict, that the barrenness of Mr. Werden's trees is traceable to one or more of the following causes, viz., to having been grafted several inches below the surface of the soil, and that they are now principally growing upon their own roots, instead of

depending solely upon the roots of the paradise stock; or they have not been grafted upon the paradise stock at all; perhaps they may have been grafted upon the Danem stock, or upon seedlings from the paradise apple, a large portion of which will, in all probability, partake more of the character of the apple trees fruiting at the time in their immediate vicinity than of the original paradise.

Mr. Werden concludes his remarks by asking "for more information respecting dwarf apple trees," which leaves the impression upon the minds of his readers, that he was losing confidence, either in his "most responsible nurserymen in Rochester," or in himself as a skillful cultivator. Now, Sir, if my opinion and experience were asked in this matter I should say more in favor of the early bearing properties of dwarf apple trees than Mr. Werden accuses those "humbug nurserymen" of saying, viz., that they will, when properly managed, fruit earlier than the dwarf pear.

Let us suppose, Mr. Editor, that you are about to plant 12 dwarf apple trees, say of the following varieties, Red Astrachan, Melon, Baldwin, Sweet Bough, Summer Rose, Golden Sweet, Wagner, Northern Spy, Benoni, Early Strawberry, Gravenstein, Keswick Codlin, and when got from the nursery they will be only two years from the bud perhaps, and, if good, they will be little stunted looking things, from one foot six inches to two feet high, budded at the ground, and when transplanted, let the bud be two inches below the surface. Some varieties, such as Northern Spy, will need shortening in to encourage lateral growth, and pruned a little every year to keep the head open and encourage fruit spurs. Other varieties, such as Wagner, will need no other pruning than picking some of the young fruit, and encouraging the growth of wood; let the strong growers be put on rather poor soil, and the tardy growers upon good soil, and all kept free from the bark house, and I am satisfied that every person who wishes to combine in one small tree or bush all that is useful, healthful, and beautiful, in flower and fruit, will find nothing approximate so near to his desires as the dwarf apple tree.

Now, Mr. Editor, let me invite Mr. Werden to visit the town of Paris, any time between the months of June and November, and if there are any apples in this part of Canada, I think he may see some here, on bushes not more than three or four years old, and from two to four feet high. We will also show him some of these bushes, after being planted ten years, that have now heads from 20 to 35 feet in circumference, and have borne at least seven good crops of apples.

Hoping that Mr. Werden will endeavour to examine his dwarf apple trees, ascertain the cause of their unfruitfulness, and report the same to the *Agriculturist*, I remain yours, &c.,

CHARLES ARNOLD, *Nurseryman*.

Paris, C. W. February 17th, 1862.

## Peterborough Horticultural Society.

In a recent number of the *Peterborough Review* we find a report of the Annual Meeting of this new Horticultural Society, at which the following remarks, showing the progress of the Society, were made by the able President, the Rev. V. Clementi.

Gentlemen,—This being the first annual meeting of the Peterborough Horticultural Society, permit me, ere we proceed to the election of the officers for the ensuing year, to address a few words to you, relative to the proceedings of the society during the season which, according to our By-law, has this day expired.

On Tuesday, the 9th day of April, last year, a few members of our community, actuated by a feeling of the advantages derivable from the establishment of a Society devoted to the encouragement of a more careful cultivation of flowers, and fruit, and vegetables, in the town and its vicinity, convened a meeting for that purpose, at which it was arranged that a general assemblage of such as were disposed to assist in the formation of an Horticultural Society, should be summoned for the 16th of the same month. Adverse circumstances preventing a large attendance on that day, the meeting was further adjourned to the 22nd, on which day a Constitution and By-Laws were adopted, and officers appointed for the current twelve-month.

It was at first intended that there should be two Exhibitions during the year; the season, however, proving unpropitious, and other matters of great local interest intervening, the spring Show was abandoned, and the only exhibition on which we ventured took place, in the Town Hall, kindly, and without hesitation, placed by his worship, the Mayor, Chas. Perry, Esq., at the disposal of the Society, on the 4th of October: an exhibition that, but for the exceedingly unfavourable state of the weather, would have proved successful almost beyond the hopes entertained by the most sanguine.

Such, gentlemen, irrespective of the detailed reports of the Secretary and Treasurer, is a brief statement of our transactions during the past season.

Before I resume my seat, however, allow me to inform you that, having accidentally met with a notice in the *Leader*, of a meeting intended to be held in Toronto, on the 30th of last month, composed of delegates from the various Agricultural and Horticultural Societies of Canada West, I made a point of attending that meeting; and I can assure you that the upper section of the province was most fully and ably represented, Colone Thomson occupying the chair.

The object of the meeting was to frame a new Bill to be brought before the House of Assembly during the coming Session.

I will not trouble you on this occasion, with



any remarks referring to the Agricultural portion of the Bill. Mr. John Walton, President of the Peterboro' Agricultural Society, was also present, and was satisfied that the interests of the community he represented were amply secured. Suffice it to say that after an hour's adjournment (we sat from noon till mid-night); at 7 o'clock the Hon. Mr. Allan moved that the following clause be embodied in the Bill, and that the motion was carried:

"Every Horticultural Society in any city, town, or incorporated village, incorporated under this act, or which may have been incorporated under any other act of the Provincial Legislature, shall be entitled to a public grant equal to the amount subscribed by the members of such Society, and certified by their treasurer to have been paid into his hands in the manner provided by the sections of the act relating to Agricultural Societies, provided that the whole amount granted to any such Society, shall not exceed one hundred pounds in any year."

I did myself the honour to address the meeting in advocacy of the claims of the Horticultural Societies. The fact of the Reporters not having returned "from refreshment to labour," until after Mr. Allen and myself had spoken, may account for no mention being made in the newspapers of our remarks.

If the Bill passes the Houses, and I entertain no doubt at all upon the subject, the Horticultural Societies will be placed in a similar position to that occupied by the Agricultural Societies.

A certain number of members will be required, and a certain amount of subscription; and then that amount will be met by an equal sum from the Government. The number is not to be less than 25; and the gross amount must not fall short of \$40.

### Report on Fruits.

The Transactions of the Massachusetts Horticultural Society for the year 1861, comprise a valuable report, submitted by J. S. Cabot, Esq., Chairman of the standing Committee on Fruits.

Having taken a view of the meteorological phenomena which characterized the past year, and noticed the injury which fruit trees sustained, the report refers to the important fact that some varieties of the same species suffered much more than others—a fact which is calculated to impress upon the minds of cultivators, the necessity of adopting the most hardy kinds. Thus speaking of pears, the report says:

"The Bartlett and Beurre Bosc suffered greatly, the trees of both having been almost universally severely injured, and in most instances wholly killed; while on the contrary, the Marie Louise, Belle Lucrative, the Urbaniste and Louise Bonne de Jersey, seemed to escape wholly unharmed; the two first of these last-

named having been, the past season, superior in quantity and quality to any season now remembered."

In regard to the special causes of the great destruction of fruit trees, the report states that perhaps no perfectly satisfactory conclusion can yet be reached, but makes the following suggestions:—

"If the attention of fruit growers should be drawn to a consideration of the matter, and by collecting of facts and comparing of opinions, some definite conclusion, as it might be, should be reached, it might induce a mode of cultivation that should measurably guard against a recurrence of the evil. On a previous occasion, similar to that of the present, the opinion was expressed that shelter to some extent, to be obtained either in the selection of a site or by artificial means, was an important element to success in the cultivation of some varieties of fruits, if not absolutely essential thereto; and this opinion has been strengthened and confirmed by observation the past season, when injury has been almost universal, and exemption from it the exception, it has been noticed that gardens or orchards that were in some way sheltered, have almost wholly escaped injury."

In this connection reference is made to the means of protection, and it is said:—

"This may be obtained by selecting a sheltered site for the garden or orchard; and where that cannot be done, by the erection of a high, close fence around it. If any question arises as to the efficacy of this last method, it needs to dispel the doubt, but a visit to the garden of Mr. Tudor, at Nahant, where, protected only by a high paling, fruit trees of all varieties may be seen flourishing luxuriantly, while outside of such enclosure, the hardiest trees cannot resist the influence of the fierce winds that blow over the peninsula. And there is no ostensible cause for the exemption from injury of the trees of Mr. Bacon of Roxbury, and Mr. Vandine, of Cambridge, and that these bore full crops of fine pears in a year so unpropitious as the past, but the shelter they receive. It further inculcates the importance, or the necessity, where profit is the object of culture, in a choice of varieties, of selecting the most hardy, keeping to view the quality of the fruit. There seems to be as much difference in the vigor and hardihood of different varieties of trees of the same species, as in the different races of animals of the same species; and it is only upon the more vigorous and hardy that a reliance can be placed."

Of strawberries, the new kinds are spoken of which were exhibited at the shows of the Society by Messrs. Hovey, and which we noticed at the time, and as we saw them on Messrs. H.'s grounds. The La Constante is described as "a magnificent fruit, of great size and beauty, of a fine color and good quality." Scott's new seedling, Lady of the Lake, is favorably mentioned. The practice of

the Belmont cultivators is alluded to as "entitled to great consideration." They depend mainly on "Hovey's Seedling, with the Jenny Lind, Boston Pine, or Brighton Pine as a fertilizer; planting them in the proportion of about six of the former to one of the latter, and setting them to single rows about four feet apart, and taking but one crop from the same vines, have new beds every year."

In regard to currants, the last year is said to have been the only one remembered in a period of forty years, in which this fruit has been much injured. Last year the blossom buds were in a great measure destroyed. Of new varieties, the La Versailles and Dana's Transparent are mentioned. The former is considered in Europe one of the best, if not the best, grown. The latter is described as very large, of fine flavor, and represented to be a great bearer.

Of raspberries, nothing particularly new was brought out last season. The Catawissa, which was exhibited as late as October 18th, may be deserving of cultivation where it is desired to prolong the season of this fruit.

Blackberries suffered severely last year by the destruction of the vines, and small quantities only were exhibited.

Of cherries, a single one from Randolph, and a branch with half a dozen black mazzards from Newburyport, were the only specimens of this fruit, grown in the open air, exhibited last season. The crop may be said to have been entirely destroyed. It is thought that many trees will not entirely recover from the effects of the winter of 1860-1.

Of peaches, there were none the past year, and the trees suffered severely—old ones being nearly all killed.

Pears, although the crop was much below an average, were generally of fine quality, owing in a great degree to the favorable autumn, and some varieties, as before mentioned, produced tolerably well.

Grapes, where the vines were wholly exposed, even in favorable situations, were much injured by the winter. Some varieties were less injured than others, among which are mentioned the Delaware and Hartford Prolific. Out of a collection of some eight or nine varieties, those and the Clinton are said to have been all that escaped serious harm. But the past summer and autumn are said to have been the most favorable for grapes of any remembered.

Some varieties, which seldom ripen here in the open air, as the Isabella, reached full maturity. Of hardy out-door varieties, E. A. Brackett exhibited a seedling, described as a black grape, heavy bloom, large bunches, thin skin, little or no pulp, very juicy, sweet and very vinous, stated by Mr. B. to have been ripe on the 10th of September. The Committee regard it as the most promising

new grape that has been brought to their notice. The hybrids of E. S. Rogers, of which we have spoken several times, are noticed, particularly No. 4 and No. 15. In regard to the experiments of Mr. Rogers and others, it is said:—

"Considered as a purely scientific experiment, that of Mr. Rogers must be deemed an eminent success; his seedlings of the first generation have parted with much of the distinctive character of the native variety, and and show plain traces of their foreign parentage. Whether he has met with equal success in originating varieties that shall, from early ripening and hardiness, be suited to the general wants, is yet to be established. . . . Although Dr. Van Mons has taught, and apparently established, a contrary theory—that of improving varieties by raising successive generations of seedlings—and that it may be thought presumptuous to call in question the teachings in Pomology from such a source, yet some doubt cannot but be entertained that hybridization is in the pursuit of this object, viz., the production of improved varieties, essential to success, and the raising of successive generations of seedling grapes from a native or wild variety under circumstances where admixture of other sorts was impossible, might be pursued not for eleven generations—when according to Van Mons, all the seedlings would be good, when the naming of varieties would become unnecessary, and propagation by grafting and budding cease—but for double that number, without showing any very marked improvement."—*Boston Cultivator*.

## Veterinary.

### Inflammation in Animals.

[Lecture by Professor Dick, Principal of the Veterinary College, Edinburgh.]

In this lecture it is proposed to give a short account of the inflammatory process, more particularly with reference to its nature. Owing to the frequent occurrence of inflammation, and the serious consequences with which it is often attended, it has from the earliest time demanded, and still demands, a great deal of attention; indeed, the greater part of medical and veterinary practice consists in the treatment of some form of inflammation, so that it is obviously of the utmost importance to have as clear ideas as possible with regard to its nature. Unfortunately, however, the subject is surrounded with many difficulties, and the vital powers of the animal body on which the phenomena of inflammation depend are so peculiar and complex



in their action, that up to comparatively recent date little was known of it as of satisfactory character. Previous to the employment of the microscope as a means of research, our knowledge of the inflammatory process was of the crudest kind; and even at this time, notwithstanding the labours of many observers, it cannot be said that the subject is by any means exhausted. Much, however, has been done in the present century to elucidate this subject, and we are now possessed of information which will enable us to follow with a considerable degree of accuracy the complex phenomena which constitute inflammation. And here, at the outset, it may be observed that there is nothing peculiar in the inflammatory process apart from the ordinary operations going on in the body. Inflammation is a vital process in the same sense as the secretion of bile or of urine is a vital process. As we shall see further on, inflammation of a part is dependant on the operation, not of foreign and extraneous forces, but of the ordinary and innate vital powers. If therefore, we knew the *modus operandi* of the vital powers in the ordinary or healthy functions of a part, we would also know the manner in which the vital forces act in inflammation. It is owing to this circumstance, viz., that the forces at work in a state of health are the same as those in a state of disease, that physiology and pathology are closely connected and mutually illustrative of each other. Indeed, properly speaking, there is no such science as pathology; it should rather be called pathological physiology. The difference, therefore, between a morbid and a healthy process is one not of a kind, but of degree. There are some processes, however, called morbid, which considered in themselves are perfectly healthy, but are regarded as morbid, because they take place at an improper place.

As health and disease are merely modifications of the same state, and pass gradually into each other, it is impossible to draw a sharp boundary line between them; for this reason a strictly scientific definition of health or disease cannot be given. For practical purposes, however, a part may be said to be diseased when the processes going on in its interior either endanger its structure or jeopardise the life of the whole organism.

In order to arrive at a knowledge of the phenomena of inflammation, it will be necessary to examine with the microscope the web of the frog's foot, both in its healthy condition and when irritated in various ways. If you place the web of a living frog under a microscope which magnifies 250 or 300 diameters, and bring one of the arteries into the focus of the instrument, you will observe the blood rushing along so rapidly that it is impossible to distinguish any of its constituents. If,

however, you follow the artery, it will be found to break up into numerous small vessels of uniform size, in which the current of the blood is instantly diminished to such a degree that you can readily see the constituents of that fluid. The combined calibre of the capillaries in which an artery terminates is considered greater than that of the artery itself, and consequently the rapidity of the current is immediately diminished in accordance with the well-known hydrostatic law, that the rapidity of the current diminishes in proportion to the width of the stream. Even in capillaries, however, the rapidity of the current stream is considerable. The corpuscles pass with great facility through the vessels, and do not exhibit any tendency to adhere to each other, or to the wall of the vessels. This is true both of the red and colourless corpuscles. It is usually stated that the colourless corpuscles move sluggishly along the *still layer*, as it is called, or the fluid portion of the blood, which is in contact with the walls of the capillaries. This is not the case, and, as already mentioned, the colourless corpuscles pass along as rapidly as the others. With regard to the terminal arteries, they are almost entirely composed of muscular fibres. These fibres belong to the plain or unstriped variety. They are arranged in one or more layers, according to the size of the artery, either circularly or in a spiral manner round the vessel. When they contract, therefore, they have the power to diminish the calibre of the vessel, or, if the contraction be strong enough, to occlude it completely. In this way the small arteries are able to regulate the supply of blood to a part. In addition to their contractile properties, arteries are also endowed with elasticity. Under ordinary circumstances, the arteries possess a certain medium size; but when, as sometimes happens, the restraining influence of the muscular fibre is removed, the vessels enlarge from the distending force of the blood, so that a much larger quantity than usual of blood finds its way into the part at the same time, owing to the unrestrained flow of blood. The capillaries beyond enlarge, and the velocity of the current is increased. When the muscular fibres again contract, the artery resumes its original size. The amount which passes through the artery, as well as its velocity, is diminished, and if the contraction proceed far enough, so as to occlude the vessel, the circulation through the artery will be stopped altogether. With regard to the capillaries of the numerous small vessels in which the arteries terminate, they are composed of a thin homogeneous membrane, in which nuclei of a flattened form are embedded at intervals. They are possessed of considerable elasticity; but, unlike the arteries, are completely destitute of contractility. Any alteration in size of the capillaries

which may take place is not due to any vital property possessed by these vessels, but is simply owing to the greater or less pressure exerted by the blood upon their walls. As already remarked, the blood flows rapidly through the vessels, much more rapidly through the arteries than through the capillaries, the blood corpuscles, both red and white, showing no tendency to adhere to each, or to the walls of the vessels. At the same time the current is equable and not pulsatory or jerking, as might have been expected from the rhythmical action of the heart.

If now the web be gently irritated, the artery immediately contracts at the point irritated, the calibre of the artery being either diminished or completely obliterated, and the circulation is either impeded or brought to a stand still. This condition, however, is soon followed by dilatation—excessive dilatation of the artery; and the blood rushes through in larger quantities, and with greater rapidity than usual; and in consequence of this unrestrained flow of blood through the artery, the capillaries beyond likewise become distended and gorged with blood. In this state the circulation through the vessels, both artery and capillaries, is more rapid than in the normal condition; but the blood corpuscles do not present any deviation from the healthy standard. But now the artery begins to contract and to resume its usual size, and when this takes place the circulation presents the same appearance as it did prior to the experiment. This experiment may be repeated several times in the same part with the same result. Here it is obvious that we have no inflammatory phenomena before us. The irritation has merely been sufficient to excite the artery to contraction, and this contraction was followed by complete relaxation or inactivity of the muscular constituents of the artery, in accordance with the general law in physiology, viz., that when a part has been called into vigorous exercise it loses after a time its functional activity, and does not regain it until a period has elapsed proportionate to the degree of its previous activity. If now the web be irritated more strongly, additional phenomena ensue, which we recognise as inflammatory. The arteries dilate immediately, or at most contract spasmodically for an instance and then dilate much beyond their usual size. The blood then rushes on in larger quantities and with greater speed, and gorges the capillaries, as described above. Soon, however, the circulation becomes slower and slower, until it becomes much more languid than the normal circulation. It then oscillates, and at last comes to a complete stand-still. Meanwhile the arteries, as well as the capillaries, are fully distended, and apparently offer no obstacle to the free passage of the blood. It is evident, therefore, that the vessels have no

special influence in causing the stoppage of the circulation in a part about to become the seat of inflammation. On examining the blood itself, we find that the corpuscles exhibit a remarkable tendency to adhere to each other, as well as the walls of the vessels. In the healthy state, as already remarked, the corpuscles have no tendency to adhere to each other or to the vessels, and there is therefore, little doubt that the viscosity of the corpuscles in the inflamed part is the immediate cause of the stoppage of the circulation. While circulation is stagnant in the inflamed part more is constantly arriving, being propelled forward by the action of the heart, and, in consequence, the capillaries soon become enormously distended with blood corpuscles. Usually the capillaries are distended irregularly, so as to form pouches or sinuities, and sometimes owing to the greater pressure exerted upon them, they burst, and allow the blood to become extravasated into the tissue. While the varicose condition of the capillaries is the immediate cause of the stoppage of the circulation, it may be asked what is the cause of this condition of the corpuscles in the inflamed part? The corpuscles before they come to the inflamed part, are quite normal; when they arrive there they become viscid, and when they leave it they resume their normal appearance. The cause of the viscosity, therefore, cannot be due to any primary alteration in the blood; if it were so the viscosity of the corpuscles would remain after they had left the part. Accordingly, we are forced to look elsewhere for the cause, and we shall probably find it in the textures themselves.

(To be continued.)

---

## Miscellaneous.

---

### The Welsh Pony.

The pure Welsh pony, to which the palm over other ponies has been yielded over and over again at the West of England Society's shows, has been celebrated from all time. To be born of a Welsh mountain mare I hold to be as high a lineage as can befall a horse. A relic are they probably of the gallant sort which Cæsar describes as tearing through the ranks of war in the scythed chariots of his British foe, pawing terribly in the valley (as is so magnificently pictured the Arabian in the oldest book on record) snuffing the battle afar off, the thunder of the captains, and the shouting, so that it required all his personal influence besides his presence to induce his tried troops at length to recover from their consternation; the trained docility and sure-footedness of which astounded him, as they



were reined up, he tells us, at full stretch in the most steep and difficult places; a number of which were subsequently thought worthy of being transported to Rome with a view to the improvement of the Italian horse, and became a favourite breed with the aristocracy of the day; so that their likeness very probably suggested to the eye and mind of Virgil that graphic description of a noble animal that he has left us in the Georgics. From this time forward, "occasional mention is made of the excellence of British horses. The Saxons appear to have paid great attention to the horse, and to have been fully aware of the importance of improving the breed. The cognisance which waved on the Kentish royal banner was a white horse. Of what character were the native breeds up to the Norman Conquest it is now impossible even to guess. That they were powerful and well suited to the purposes of war, both by their stature and training, we have the testimony of Cæsar before mentioned, and of subsequent historians; but the first attempt on record to improve the native stock by the introduction of foreign blood, occurred during the reign of William the Conqueror, when Roger de Belesme, Earl of Shrewsbury, imported the elegant and docile Spanish horse, and bred from it on his estates in Powis land; and it is recorded that the horses of that part of Wales were long celebrated for their swiftness—a quality which they doubtless derived from this happy mixture of blood."—(Yarrell.) At a subsequent period there is a tradition of some foreign horses swimming ashore from a wreck in the British Channel, and escaping clear to the hills. Of recent years great occasional efforts have been made by various landed proprietors in North and South Wales to improve the breed by turning out occasionally an Arab; but the small farmers on the mountain-side stand greatly in their own light, and persist in neglecting material which in skilful hands might prove a very mine, and which, even as it is, yields occasionally most exquisite specimens. To see a herd in summer-time beneath you in the hollow of the Black Mountains gathered by a spring—of all ages, yearlings, foals, colts, two-year-olds, with the brood mares white from age—and then to contemplate the ragged-jointed indescribable that is lord of the troop, it is a wonder that anything tolerable ever passes to the lowlands. But it is about Christmas time, that, as a purchaser, you have a chance of selecting deliberately to suit your taste. Then when the Siberian weather sets about those everlasting hills, and by the

"Precipices huge  
Smoothed up by snow"

there is no longer any picking to be found, they descend to the boundary of the common land, and are admitted into strawyards, being all distinguished by their respective owners through special marks upon the ear or flank. Then is

there opportunity for a judge to pick many a valuable colt from amidst the bright-eyed bears (for they look like nothing else), as they crowd nervously into a corner on your approach, ready to spring over if it be not exceeding high, or cat-like scramble across in a moment. Some five-and-twenty years ago, the noble-hearted proprietor of Rug, in Denbighshire, Colonel Vaughan, lineal descendant of Prince Llewelyn, took great pride in the improvement of a tribe upon the neighbouring Berwyn range. The picture of his Apricot I have beside me as I write, 12½ hands in height—a bright chesnut, with a beautiful small head, full eye, elegantly turned quarters, muscular thigh, arch neck, and a Blink Bonny shoulder, the victor of a hundred races at Ruthin, Mold, and on the historic flats of Harlech, against much taller horses than himself more than once. I am glad to know that there is a good sprinkling of his stock left yet in Merionetshire. How those whipper-in lads attached to the Rug fox-hounds would on their ponies overtop the highest wattled fence, creep in and out of the ugliest thicket, stream down the steepest hill-side without halt or blunder, then rein them at the bottom as cool as any travelled hunter, so calmly to trot off with a message for the master.—*Beever's Notes on Fields and Cattle.*

**PERSEVERANCE**—At the close of the last century, a poor, awkward, uncouth boy entered London; but he was so long, lank, and ungainly, that he seemed fit only to be the drudge of a printing-office—run errands, bring water, sweep the floor, and the like. Already had poverty and the hardness of the world made him sour, unhopeful, and despondent. Under less discouragements, many a youth has abandoned himself to a thriftless life, having no higher aim than to live but for the day; or, worse still, has plunged headlong into all the extravagances and indulgences connected with thriftlessness and crime. But the boy had vigorous health: this imparted to him a mental *vim* a moral power, which soon showed itself to his employer. He was prompt, persevering, and painstaking; and with these three qualities, in spite of the fact that he was good at nothing (in everything tolerably only), he made his patient way, step by step, to the "woolsack," (that is, the seat of the highest judge in England), and lately died worth £200,000 among the most honoured men of his nation and age, Lord Chief Justice Campbell. In this case, vigorous health was a mine of wealth, a better fortune than if he had been the heir of many thousands. And certain is it, that the world would be a happier world, and the men in it would be happier, better, and greater, if one time of the time, and care, and study, which parents bestow on the accumulation of money to leave to their children, were devoted to the physical education and training necessary to secure

a vigorous constitution. Of any two young men starting on the race of life, one poor but healthy, and the other rich and effeminate, other things being equal, the chances for usefulness, honour, and a well-remembered name, are manifold, in favour of the former. Every man of the least observation and reflection knows this to be an indisputable truth. Yet, in view of the fact that vigorous health is a better and safer fortune than stocks and bonds, how many in each hundred parents who read this article will lay it down and resolve: "I will do more to leave to my children a vigorous constitution?" Another element in the success of Lord Chief Justice Campbell was, that his employer, seeing his dull nature, but noticing at the same time that when he had anything to do, he went at it promptly, and, with great painstaking, kept at it until the work was done, although painfully slow, he patted him on the shoulder, always spoke cheerfully to him, and, with considerate consistency, threw little jobs in the way, by which the heavy boy might earn a little money, and be stimulated to greater activities. How many a youth at school, how many an apprentice in the shop, how many a child in the family, has gone out in the night of a blighted life, who with humane encouragement, might have lived usefully and died famous, let the passionate teacher, master, and parent inquire, and do a little more patting on the shoulder!—*Hall's Journal of Health*.—

**THE TYRANT FLYCATCHER**—This bird is one of the migratory visitors of the United States, and often bears the name of "King," as well as "Tyrant." According to Wilson, he does so from the extraordinary authority he assumes over all others during the time of breeding. So great is his affection for his mate, his young, and his nest, that, suspicious of every bird that approaches it, he violently attacks all intruders. In the month of May, June, and part of July, his life is one continued scenes of broils and battles, in which, however, he generally comes off conqueror. Strange to tell, hawks and crows, the bald eagle, and the great black eagle, all equally dread an encounter with him, who, as soon as he perceives any one of them approaching, launches into the air, mounts to a considerable height above him, darts down on his back, and sometimes fixes himself there, to the great annoyance of the assailed, who, if no convenient retreat or resting-place be near, strives, by various evolutions, to free himself from his merciless adversary. But the king-bird is not easily dismounted. He teases the eagle incessantly, sweeps upon him from right to left, rises, that he may descend on his back with greater violence, all the while keeping up a shrill and rapid twittering, and continuing the attack, sometimes for more than a mile, till he is relieved by some other of his tribe equally eager for the fray.—*Cassell's Popular Natural History*.

**ALL HAVE INFLUENCE.**—No man stands alone in the world, but is influencing, for good or evil, many of his fellow-creatures. "What can I do?" is an oft-repeated question, especially among those who fancy they are so low in the social scale, or so poor in ability that their example can have no effect. "Billy Dawson," the well-known Wesleyan preacher, was once preaching on "Influence," and at the close of his discourse, a farmer said to him, "Your remarks are very good, Mr. Dawson, but they scarcely seem to apply to me. I have no more influence than a farthing rushlight." "A farthing rushlight!" said the preacher, "why, a farthing rushlight may set fire to a haystack, afford a poor woman the light to read a chapter in her Bible; or, placed in the window of a cottage on a desolate moor, may guide the weary, footsore, and lost traveller to a place of rest and safety." And so it is with the moral world. A kindly action, a word in season may effect a great change in the character of a man; and, just as a small stone is capable of turning out of its course the current of a stream; so the influence of the weakest of God's creatures may often effect the greatest of good. It should be remembered that because the man had but one talent, it was no excuse for him when it was discovered that he had buried it in a napkin.—*Old Jonathan*.

**FLORENCE NIGHTINGALE ON CRINOLINE.**—It is I think, alarming, peculiarly at this time, when the female ink-bottles are perpetually impressing us "woman's particular worth and general missionariness," to see that the dress of women is daily more and more unfitting them for any "mission" or usefulness at all. It is equally unfitting for all poetic and all domestic purposes. A man is now a more handy and far less objectionable being in a sick room than a woman. Compelled by her dress, every woman now either shuffles or waddles; only a man can cross the floor of a sick room without shaking it.—What is become of woman's light step—the firm, light, quick step we have been asking for? A nurse who rustles (I am speaking of nurses professional and unprofessional) is the horror of a patient, though perhaps he does not know why. The fidget of silk and crinoline, the rattling of keys, the creaking of stays and shoes, will do a patient more harm than all the medicines in the world will do him good. The noiseless step of woman, the noiseless drapery of woman, are mere figures of speech in this day. Her skirts (and well if they do not throw down some piece of furniture) will at least brush against every article in the room as she moves. Fortunate it is if her skirts do not catch fire, and if the nurse does not give herself up a sacrifice, together with her patient, to be burnt in her own petticoats. I wish the Registrar-General would tell us the exact number of deaths by burning occasioned by this absurd and hid-



eous custom. I wish, too, that people who wear crinoline could see the indecency of their own dress as other people see it. A respectable elderly woman, stooping forward, invested in crinoline, exposes quite as much of her own person to the patient lying in the room as any opera-dancer does on the stage. But no one will ever tell her this unpleasant truth.—*Notes on Nursing.*

**HORRORS OF SWINE AMONG THE SCOTTISH PEASANTS.**—If that animal crossed their path when about to set out on a sea voyage they considered it so unlucky an omen that they would not venture off. A clergyman of one of these fishing villages having mentioned this superstition to a clerical friend, and finding he was rather incredulous on the subject, in order to convince him, told him he would allow him an opportunity of testing the truth of it, allowing him to preach for him on the following day. It was arranged that his friend was to read the chapter relating to the herd of swine into which the evil spirits were cast. Accordingly, when the first verse was read in which the unclean beast was mentioned, a slight commotion was observable among the Scottish audience, each one of them putting his or her hand on any near piece of iron—a nail on the seat or backboard, or to the nails on their shoes. At the repetition of the words again and again, more commotion was visible, and the words “cauld airn” (cold iron), the antidote to this baneful spell, were heard issuing from various corners of the church. And finally, on his coming over the hated word again, when the whole herd ran violently down the bank into the sea, the alarmed parishioners, irritated beyond bounds, rose, and all left the church in bodies.—*Ramsay's Reminiscences.*

**FLOWERS AND FOLIAGE OF INDOOR PLANT CASES.**—Miss Maling in her interesting little work on this subject, recently published in England, brings prominently before us a modified form of glazed case for plants, which is called the Indoor Plant Case, “the original idea of which was of course taken from the Wardian case,” to which the chief addition seems to be the provision of a simple plan for heating, so arranged that the plants may either be cool if they are of a nature to bear a low temperature; or “at 10 minutes's notice the heat can be raised to any degree up to 90 degrees.” When we think of the fleeting plants and flowers that during summer ornament our open drawing-room stands, it must be admitted that something more is wanted. “I have, till quite lately,” writes Miss Maling, “been interesting myself in these cases, contriving to work them up to something like completeness, without much noting the time the flowers lasted; still the lamentations of friends who found time after time this flower and that flower and another flower lasting with me, while

theirs meanwhile had gone through many a change—all this made it quite evident that two months were long for primroses, and five weeks for hyacinths; while for geraniums and gloxinias, fuchsias and begonias, I venture not to speak. I may say, most truly, that I know no other means of keeping flowers anything like so long as two months, either in a drawing-room with its dry air, or in a green-house with its passing currents, and certainly not in a garden bed in the finest season. Yet, after all, the secret is a very simple one. It is merely the stillness around them which preserves the flowers so very long unchanged; while the peculiar arrangement by which the heat is supplied provides that soft, dewy atmosphere in which so many of the prettiest plants delight.”

**UNLUCKY PEOPLE.**—It is a part of the great fact of luck—the indubitable fact that there are men, women, ships, horses, railway engines, whole railways, which are unlucky. I do not believe in the common theory of luck, but no thoughtful or observant man can deny the fact of it. And in no fashion does it appear more certainly than in this, that in the case of some men cross-accidents are always marring them and the effect they would fain produce. The system of things is against them.

They are not in every case unsuccessful, but whatever success they attain is gained by brave fighting against wind and tide.

At College they carried off many honors, but no such luck ever befel them as that some wealthy person should offer, during their days, some special medal for essay or examination, which they would have gained as of course. There was no extra harvest for them to reap; they could do no more than win all that was to be won. They go to the bar, and they gradually make their way; but the day never comes on which their leader is suddenly taken ill, and they have the opportunity of earning a brilliant reputation by conducting, in his absence, a case in which they are thoroughly prepared. They go into the church and earn a fair character as preachers; but the living they would like never becomes vacant, and when they are appointed to preach on some important occasion, it happens that the ground is a foot deep with snow.—*Frazer's Magazine.*

**AMMONIA IN RAIN.**—Any one may satisfy himself of the presence of ammonia in rain, by simply adding a little sulphuric or muriatic acid to a quantity of rain water, and by evaporating this nearly to dryness in a clean porcelain basin. The ammonia remains in the residue, in combination with the acid employed, and may be detected either by the addition of a little chloride of platinum, or more simply by a little powdered lime, which separates the ammonia, and thus renders sensible its peculiar pungent smell. The sensation perceived on moistening

the hand with rain water, so different from that produced by pure distilled water, and to which the term "softness" is vulgarly applied, is also due to the carbonate of ammonia contained in the former—*Liebig's Organic Chemistry*.

**REMEDY FOR COLD FEET.**—It is impossible to have vigorous health if the feet are habitually cold; no amount of external covering can keep them warm. Wearing pepper and other irritants in the stockings, is generally inefficient, is always hurtful in its tendencies, and never accomplishes a permanent radical good. One of the most uniformly efficient means of keeping the feet warm is to wash them in water at least as cold as the atmosphere of the room, night and morning; let it be done within a minute in very cold weather, then wipe and rub them rapidly and thoroughly with a very coarse towel, dress, and when practicable, take a walk or else dry them by the fire, rubbing them well with the hands.

In addition, let half an inch of curled hair be basted to a piece of cloth and slipped in the stocking, the hair touching the soles of the feet to titillate the skin, and thus aid in drawing the blood thither to warm them. The hair conduct, the moisture from the feet to the woollen cloth and thus keeps them dry. These hair-soles should be placed before the fire at night, so as to be thoroughly dried by the morning. Cork-soles absorb moisture from the shoe and the feet also, and require several days to be thoroughly dried. India-rubbers confine the dampness about the feet, hence they should be promptly removed as the wearer ceases walking nor should they be used except in muddy, slushy weather.—*Halls' Journal of Health*.

**HOW THE BIBLE WAS TRANSLATED.**—We are indebted to King James for the excellent translation of the Bible now in use. This version was undertaken by him in performance of a promise made by the King at Hampton Court conference; and Dr. Reynolds, the great champion of the Puritans, by whom it was there suggested, was one of the divines engaged in its execution. Forty-seven of the best biblical scholars undertook the great labour of love, who divided themselves into six classes, each undertaking a portion of the Scriptures. Each member of a class translated the whole of the portion set apart to this class, then the class met, and revised as a body their separate versions. One general version was next agreed upon by the class, which was subsequently revised by each of the other classes. Two of the classes sat at Cambridge, two at Oxford, and two at Westminster. Three years were spent in the undertaking; viz., from 1607 to 1611. The new version was dedicated to the king, and printed by Robert Barker in the year of its completion. The excellence of the translation is universally acknowledged; and though in consequence of the changes which our forms of speech have

since undergone many expressions in it may now appear unrefined or homely, its general effect is far more impressive than that of a more polished translation. Up to the time of James I., all Bibles were printed in German character, or black letter, but, after that date, the Roman letters (as now employed) were adopted, and soon superseded the old-fashioned manner of printing. The appearance of King James's Bible formed almost on the most important events in the history of the English language; it had the immediate effect of recommending to common use a very considerable number of words derived from the learned languages, for which the translators had been unable to find equivalents in the current English of the time. At present it performs a service of an opposite nature, and keeps in use, at least in remembrance, many valuable words and expressive idioms which would otherwise have been rejected with disdain by the fastidiousness of modern taste as homely and familiar.—*Englishwoman's Domestic Magazine*.

**SMOKE-HOUSES.—HOW SHOULD THEY BE BUILT?**  
—A smoke-house should be square, its size varying from four to eight feet in diameter, according to the quantity of meat required to be smoked; the lower portion to the height of five feet should be of brick, with a door lined with sheet iron. This part may serve both as an ash-house and as the proper place for the fire to furnish the smoke. Fire should be placed in the middle and covered with the material to be burned, so that the mass being surrounded by ashes, may maintain the ignition for a long time, giving off the smoke with regularity. The upper part may be wood, and the separation from the lower part by joists, covered with scantling, so as to leave spaces averaging three inches in diameter for the ascent of the smoke. The height of this upper portion may be four feet, beside the ascent of the roof, and should be furnished with a door that may be locked, so that the door of the lower portion will not give ingress to the meat-room. This separation between the two portions will catch any piece of meat that may accidentally fall, while the lower portion need not be locked, so as to enable the frequent removal of ashes from the house, and the proper attention to the fire to be more readily performed. Saw-dust placed over a few ignited coals will furnish the necessary material for smoking the meat. The saw-dust however, should be from such wood as is most free from resinous matter. The pyroligneous acid evaporated is of a better flavour from hard than from the soft woods, while the amount of creosote, which is the preservative property, will be the same.—*Working Farmer*.

**DIFFERENT MODES OF WALKING.**—We have little difficulty in recognizing three chief classes among pedestrians. First, there are those who



walk with a pompous strut, or a mincing gait, or affect some style or other. We are naturally very little inclined in favour of such persons; indeed, we have usually to make an effort not to be decidedly prejudiced against them. Secondly, there are those who pay too little attention to their movements, who do not seem to be sufficiently alive to the responsibility attaching to the possessors of so noble a structure as the human frame, and who do not give themselves the trouble to exert the powers of the glorious mechanism with which they are charged. They slouch, or dawdle along in a listless, lazy manner. Instinct tells us rightly to beware how we trust such persons with the conduct of our affairs, or with any office of responsibility. We feel that the lack of energy manifested in the guidance of their limbs is, too probably, a feature of character which unfits them for the active duties of life; and we know that such men are not usually successful in their calling. Thirdly, there are those who show, by the firmness and precision of their step, and by the regularity in the succession of their movements by which the step is made, that they are conscious of the dignity of their species, of the responsibility attendant on that dignity, and of the respect due to themselves. Such men, we feel, are likely to pursue their avocations energetically, and methodically, as well as with punctuality. Many points of character peep out in the way men walk. Our poet tells us that in one we may read

“rascal in the motions of his back,  
And scoundrel in the supple sliding knee.”

Another has a halting, shuffling, undecided gait; while a third walks in a bold, determined, straightforward, erect and independent manner. One has a cautious, parsimonious step, as if sparing of shoe leather, or afraid to trust the ground: he has, however, probably trusted the funds with considerable investments. Some walk with long pretentious strides; others make short, quick, insignificant steps. Some, again, are hurried, fussy, noisy; while others glide along in a quiet, shrinking, unpretending—it may be timid manner.—*The Human Foot.*

A SOUTHERN PLANTER'S HOME.—It is quite in the suburb, near the second Bayou; a great shapeless road, ankle deep in white dust, lies before it, fringed by those loathsome open drains that are the curse of New Orleans and the chief originators of the yellow fever. In this road negro children roll and scramble, and pigs rout and grunt. Before Mr. Quackenboss's house there is a row of huge magnolia trees, at this time covered with tufts of pink and scarlet flowers, which contrast beautifully with the small dark myrtle green leaves. My hospitable friend pushes open a wicket gate, and we pass up a garden walk and enter the cool verandah'd house. Mrs. Quackenboss and the little Quackenbosses are on a visit to Cuba, so we are alone.

My friend claps his hands and a negro boy appears, receives an order, and returns in a few minutes with two bottles of German wine, a bowl of sparkling ice, a box of cigars, and some tumblers. My friend gave a sigh of satisfaction, took up with an air of reflection a feather fan of Mrs. B's that lay on the table, spat three times at a special knot on the floor, and throwing his feet over the back of a very high chair, began to open the conversation on the subject of the cotton supplies of England,—*Dickens's "All the Year Round."*

EXISTENCE.—It is an unquestionable fact that those who are equally acquainted with, and equally capable of appreciating and enjoying both, do give a most marked preference to the manner of existence which employs their higher faculties. Few human creatures would consent to be changed into any other animals for a promise of the fullest allowance of a beast's pleasures; no intelligent human being would consent to be a fool, no instructed person would be an ignoramus, no person of feeling and conscience would be selfish and base, even though they should be persuaded that the fool, the dunce, or the rascal is better satisfied with his lot than they are with theirs. They would not resign what they possess more than he for the most complete satisfaction of all the desires which they have in common with him. If they ever fancy they would, it is only in cases of unhappiness so extreme, that to escape from it they would exchange their lot or almost any other, however desirable in their own eyes. A being of higher faculties requires more to make him happy, is capable of more acute suffering, and certainly accessible to it at more points than one of an inferior type; but in spite of these liabilities, he can never really wish to sink into what he feels to be a lower grade of existence,—*"Utilitarianism" in Frazer's Magazine.*

THE PUBLIC HEALTH.—INFLUENCE OF THE SEASONS ON THE HUMAN SYSTEM.—Dr. Edward Smith, F. R. S., delivered, at the meeting of the British Association at Manchester, a lecture upon this subject. The observations he made were to show the variation of the vital action in the human system, and his two principal inquiries referred, the one to the respiratory functions, and the other to the elimination of nitrogen. In reference to respiration, the amount of carbonic acid evolved varied from day to day with the cycle of the seasons. He had found that there was a definite variation in the amount of vital action proceeding within the body at the different periods of the year, and this showed a well marked course. Thus, at the beginning of June a fall commenced, and this continued and progressively increased through June, July and August, until the commencement of September, when the lowest point was attained. After this period, in October an upward tendency was manifested, and it continued

through October, November, and December, until January, when a point was attained from which there was little variation in January, and March. In April and May the amount of carbonic acid evolved was yet further increased until the point was reached whence he started. The extreme amount of change observed was a loss of three grains of carbonic acid gas per hour from the commencement of June to Sept.; and the extreme quantities recorded were in May 10.26 grains, and at the lowest period between six and seven grains. The rate of respiration, the quantity of air inspired, and the quantity of carbonic acid exhaled, followed the rule he had explained. It had been proved by several series of experiments that the rate of pulsation was increased by heat—the rapidity of pulsation was the converse of the rate of respiration. With reference to the evolution of nitrogen the conditions were the opposite of those of the elimination of carbonic acid. The general results he had arrived at were, that there was a greater amount of fluid evolved in the summer months than in the winter. The carbonic acid evolved decreased with the increase of temperature. On a sudden increase of temperature there was a large decrease of vital action, and on a fall of temperature there was an increase of vital action. The greatest growth of animals would occur at the period of the year when there was the largest amount of vital action; and in this respect they had connected the animal with the vegetable kingdom. He believed that this was the fact with regard to the growth of children—that they grew at a greater rate in spring than in winter. From facilities which the Registrar-General had afforded him, he had ascertained that a much larger number of those children born at the latter part of summer died within a year of birth than took place amongst those born at other periods of the year. The children born in the winter and spring period were less subject to disease, and in a probability, had stronger constitutions than those born in the summer season. These variations in the increase and decrease of the vital power of the system seemed to him to be the origin of diseases, especially those that were chronic. All epidemics, to a large extent, in whatever part of the world they occurred, took place at the period when the human system was decreasing in vital action. This rule applied to cholera especially, which generally attained its greatest height in June, in October diminished, and in November disappeared."

#### ADULTERATION OF ARTICLES LIABLE TO DUTY.

—The report of Mr. Phillips, the head of the laboratory department of the Inland Revenue, has just been published for the year ending the 31st of March. He states that the analyses made during the 12 months amounted to nearly 11,000, and that the officers have become so efficient that although some of these analyses had

to be sustained in courts of justice, not an instance has occurred of any one of them having been shown to be wrong. The articles on which Mr. Phillips specially reports are tobacco, snuff, pepper, coffee, beer and hops, and malt. With regard to tobacco, it is stated, that although it would be absurd to suppose that the smuggling and adulteration of an article subject to a duty of about 700 per cent. upon its cost can be entirely prevented, there is reason to believe that frauds are rare, and that the revenue from this article is comparatively well secured. An inspection of most of the tobacco manufactories in Ireland, and of many of those in England, during the year, has taken place without the discovery of a single practice that could be deemed illicit. Of five adulterated samples purchased, it is to be presumed, of retail dealers, the illicit materials consisting of burdock, colts-foot, and cabbage leaves, sugar, common salt, and oil. Of snuff it is stated that owing to the great diminution which has taken place during the last four or five years in the adulteration of this article, it has been found necessary to examine only ten samples. Of these, three, which all came from Ireland, proved to have been sophisticated with peat-moss and ground Pinewood Pepper, it is believed, is still extensively sold in that the prevalence of the fraud is mainly due to an adulterated state, and Mr. Phillips considers the practices of some wholesale dealers in and grinders of the commodity. "The skilful and almost scientific manner in which the pepper was so adulterated," he says, "and the care which is taken to render detection difficult and conviction doubtful, are alone sufficient to point out the source, as it is always easy on analysis to distinguish between the highly-finished article of the wholesale delinquent and the bungled production of the unscrupulous retailer." The illicit materials detected in the samples examined during the past year were rice, husks of red and white mustard, sago starch, and the starch of cereals. Coffee also continues to be extensively adulterated, and it is to this that the fact of the consumption not having increased during the last 14 years, in face of a reduction of duty, is supposed to be attributable. Chicory is the material almost universally employed, and within the past 12 months numerous samples which had been purchased as pure coffee have been analysed in the laboratory, and found to contain from 30 to 86 per cent. of chicory. From Glasgow and some other towns in Scotland many samples which were bought at the rate of 1s. 8d. per lb. having been found to contain from 50 to 70 per cent., and in one instance 84 per cent. of chicory. In samples sold at 1s. 4d. avowedly as mixtures of coffee and chicory, there is really it is said, no limit to the proportion of the latter, and instances occur in localities chiefly inhabited by the very poor, where the samples prove to be composed of it entirely. Out of



many thousand analyses, it has been found that on an average, more than 29 per cent. of samples sold as pure coffee were adulterated with chicory, while of those sold as "mixtures of coffee and chicory," the proportion of chicory was more than 39 per cent. This is greater than in previous years, and Mr. Phillips remarks that it "at once gives the clue to the causes which are in operation in keeping down the importation of coffee."

#### SUNSET IN THE NORTH-WEST HIGHLANDS.—

Among the many contrasts which geology delights to conjure up to the imagination, few are more striking than that which comes before us amid the wilds of Skye, or the glens of Mull. To sit in the light of an autumn evening, as we have often done, and mark the sinking beams as they strike along the sides of those truncated pyramidal hills, revealing terrace over terrace in alternate bars of dark crag and green slope—features that are but faintly seen in the glare of noon-day; to cast the eye to the right hand and to the left over the wild heathy uplands that stretch around in utter solitude and stillness, and to watch how hill-top after hill-top loses its blush of sunset, and how the chill shadows struggle upward from dark and lonely glens, and then, as the sun dips under the Atlantic, and all the landscape around is suffused with a cold grey hue, and the night begins to descend, to bethink us how these hills arose, and in what a far distant era; how they were heaved out as burning rocks from subterranean abysses, and rolled over river and sea; how sheet after sheet was piled upon submerged estuaries, with their shell banks and fringing forests; how, again, on the cooled and hardened lava, as it sank beneath the waters, animal life flourished as abundantly as before, and new forests sprang up as luxuriant as those which had preceded them; to reflect how different were the forms both of animal and vegetable life from those which characterize the district now; and then letting our imagination drift down the long cycle of ages and mutations that succeeded to those of the oolite, to find ourselves once more among the heathy hills of the Inner Hebrides, as the dark night-dews begin to fall—this is a train of reverie which, in spite of what may be said by the strict and formal *savant*, is to some minds as natural as it is pleasant and useful, for it gives life to the dead past, by linking it in with the living present; it expands our appreciation of the existing world, by showing us how the features of that world have arisen; and by thus uniting us with past and present, with the immeasurably ancient and the comparatively new, it enlarges our views of nature, and makes us feel in a novel, but not the less impressive manner, that there is a unity in creation—a sympathy which, in a way we know not, binds all things to each other, and to Him who is at once their author and their end.

—*North British Review.*

#### Farming in Devonshire.

[From Maxwell's *Sighs, Smiles, and Sketches.*]

A. D. 1861.

Come, wife, 'tis time for we to rise,  
The clock is striking five :  
Be quick and get the tateses fried ;  
Now do, lass, look alive.  
I've got to put my barley in .  
And now the first of May's come ;  
I don't know how us shall get on,  
If many rainy days come,  
I've got to cart out all my dung  
And lime to till the tateses ;

The land's as wet as wet can be.  
How bothered my poor pate is !  
There's Brisk and Boxer cruel galled,  
And Tidy Mare is gripy ;  
And oats are down, and wh'at's a'valled,  
And Roger's always swipy ;  
And all the sheep have got the scab,  
And wool's a going down ;  
And I've to draw my produce in,  
Vul vourteen miles to town.

And Lady-day's a'come and gone,  
And I've not paid my rent yet ;  
And Bill, and Jan, and little Joe  
Ha' ne'er to school been sent yet.  
Us cant get on if times don't mend—  
'Tis raly quite alarming :  
I only wish my lease was out,  
I'm zure I'd give up farming.

A. D. 1900.

Matilda ! order chocolate ;  
I'ts nearly ten o'clock ;  
And getting up at half-past eight  
Is really quite a shock.  
I worked so hard till nine last night,  
To prove that last analysis,  
That, should my brain be further tried,  
I really fear paralysis.

Well, I'll just take a quiet ride ;  
James, bring my locomotive—  
That half-horse power, with trotting springs  
Of health 'twill be promotive.  
And, James, do fetch a gallon of  
Concentrated Thames water ;  
I'll just top-dress my cucumbers—  
Five acres and a quarter.

Well, here I'm back ; I've been all round ;  
The farm is looking splendid  
What fools they were, some years ago,  
To work as hard as men did !  
I've heard my grandsire say, his dad  
Met with some dreadful losses :  
No wonder, when they used to work  
With those great horrid hosses.

And, James, just touch the telegraph,  
 And bid my engineer  
 Turn out six dozen ploughs next week,  
 To get the breaches clear;  
 And tell professor Faraday,  
 And my sub-chemist, Jones,  
 To forward, by next Monday's post,  
 Their last extract of bones.

'Tis time I got my turnips in;  
 I should not like to mess it;  
 And as I've only one square mile,  
 There'll be enough to dress it,  
 And, James, do turn the battery on,  
 The wheat is just in flower,  
 And give it one galvanic shock;  
 It wants a gentle shower.

And syringe all the cabbage plants  
 With essence of guano;  
 And ask Miss Jane to milk the cows  
 With the new "vaccine piano."  
 And, James, fetch down my last balloon,  
 With speed-retarding crupper,  
 I'm going to Barnet fair to-day,  
 And shan't be back till supper.

### An Interesting Sheep Experiment.

In Scotland as well as England it is well known there is great attention paid to sheep-breeding, both for the wool and flesh; indeed, there is no country in the world where success has been so great and gratifying. Our best breeds of sheep are obtained there; but we have found that the mixed breeds do better with us in the long run than the pure imported stock. The following experiments, undertaken by the Parlington Tenant's Club of Scotland, as we find it reported in the *Scottish Farmer*, to prove the fattening qualities of certain breeds, will be read with interest. A stone is 14 lbs.)

There was eight different kinds of sheep, and each lot were turned into a two-acre plot of a 16 acre field, each plot being of equal grazing value. The lot consist of—1st, ten crosses from the Teeswater with the Leicester; 2nd, twelve crosses from the Cheviot with the Leicester; 3d, ten Lincolns; 4th, ten South-Downs; 5th, ten Shropshire Downs; 6th, twelve Leicesters; 7th, ten Cotswolds; and 8th, seven odd sheep, one from each of the above classes—all hogs. The fairness of the above trial would thus appear to be somewhat vitiated by the difference in the numbers. The cross Cheviots and the Leicesters would have a sixth less, grass than five of the other lots, and five-twelfths less than the odd sheep.

The lots were all turned into grass on the 23d of May. A fortnight after this they weighed. The weight of the Teeswater crosses were 106 stones 3 lbs.; of the Cheviot crosses, 124 stone 13 lbs.; of the Lincolns, 125 stone 9 lbs.;

of the South-downs, 95 stone 10 lbs.; Shropshire-Downs, 101 stone 6 lbs.; odd sheep, 69 stone 7 lbs.; Leicesters, 116 stone 3 lbs.; and Cotswolds, 90 stone 9 lbs. Between this date and the fourth of October the Sheep were weighed four times. After four months' grazing, supplemented by 3 lbs. of linseed cake per day, from 17th June to 1st August, and thenceforward with 6 lbs. per day of the same materials, it was found that the Teeswater crosses had added 18 stone 1 lb., or nearly one-sixth to their original weight; that the Cheviot crosses had added 18 stone 9 lbs., or little more than one-seventh; the Lincolns 6 stone 7 lbs.; or about one-twentieth; the South-Downs, 13 stone 2 lb., or less than one-seventh; the Shropshire-Downs, 20 stone 8 lbs., or about one-fifth; the odd sheep, 11 stone 10 lbs.; or almost one-sixth the Leicesters, 24 stone 71 lb., or nearly one-fourth; and the Cotswolds, 19 stone 6 lbs., or more than one fifth of their original weight. The advantage is thus in favor of the Leicesters and Cotswolds. The Cheviot crosses, however, do not seem to have had enough of grass, having decreased instead of gaining in weight during the last month.

One sheep of each kind was tried on grass without any artificial food. Under these conditions, the Cheviot and Leicester cross greatly surpassed all the rest, making three stones in four months.

The grass eaten is, of course, an item, when profit, comes to be calculated, and the Cheviot crosses appear to be the greatest consumers. Next to them the Lincolns and Shropshire-Downs bared their pasture most, and after them the pure Leicesters and Cotswolds. The fact that the sheep were not all in the same condition when procured, must also affect the experiment to some extent, but it is to be commended as a step in the right direction.

**REMEDY FOR SLEEPINESS IN CHURCH**—The art of balancing has become quite popular, and has been deemed worthy of explanation in the form of a lecture by the scientific Mr. Pepper, who is smart and learned at the same time. We must extract one of the little jokes with which he peppered his lecture and made it most acceptable fare: he said the old monks' seats in Westminster Abbey, in Henry VII.'s Chapel, were placed on an axis which passed through the centre. As long as they remained awake nothing happened, but directly they went to sleep the seat upset and they were tumbled out. This unclerical merriment was also provided for at the church at Bishop's Stortford, where the seats were similarly constructed. The idea is worthy of introduction into some of our modern "sensational" churches.—*Court Journal*.

**ANTLERS OF THE STAG**—There is no comparison, as regards size, to be made between the antlers of the present and of former centuries, so greatly inferior are those which we have to



those which have been; and it is quite natural that it should be so. Not only did the deer formerly reach a greater age, but they had better and more abundant pasturage than now, when the woods are cut down, and the land is highly cultivated. Abundance of nutritious food produces generally antlers of large growth.—*Forest Creatures*

### Agricultural, Horticultural, &c.

The following Books on these subjects to be had at

BAIN'S BOOK STORE,  
46 KING STREET EAST.

|                                           |        |
|-------------------------------------------|--------|
| Dadd's Modern Horse Doctor, cl.....       | \$1 00 |
| Do. American Cattle Doctor, cl.....       | 1 00   |
| Greenon's Treatise on Milch Cows, cl, &c  | 60     |
| Mayhew on the Horse, 8mo.....             | 2 50   |
| Youatt & Martin on Cattle, 12mo.....      | 1 25   |
| Youatt & Spooner on the Horse.....        | 1 25   |
| Clater's Cattle Doctor, 12mo.....         | 1 25   |
| Clater's Farriery, 12mo.....              | 1 25   |
| Stewart's Stable Economy, 12mo.....       | 1 00   |
| Miles on the Horse's Foot.....            | 50     |
| Thomson on the Food of Animals.....       | 75     |
| Dogs and their Management by Mayhew.      | 63     |
| Milburn on the Cow.....                   | 25     |
| Martin on Cattle.....                     | 38     |
| Youatt on the Horse.....                  | 25     |
| Martin on the Sheep.....                  | 25     |
| Dayle on Domestic Poultry.....            | 1 50   |
| Watts on the Poultry Yard.....            | 25     |
| Pigeons and Rabbits by Delamee.....       | 25     |
| Martin on the Pig.....                    | 25     |
| Boussingault's Rural Economy.....         | 1 25   |
| Dama's Muck Manual.....                   | 1 00   |
| Sibson's Agricultural Chemistry.....      | 38     |
| Johnston's Agricultural Chemistry.....    | 1 25   |
| Johnston's Elements.....                  | 1 00   |
| Burn's (R. S.) Hints for Farmers.....     | 25     |
| French on Farm Drainage, 12mo.....        | 1 00   |
| Flint on Grasses.....                     | 1 25   |
| Langstroile on the Honey Bee.....         | 1 25   |
| Neil's Fruit, Flower and Vegetable Garden | 1 00   |
| Bridgeman's Kitchen Garden.....           | 60     |
| Buist's Family Kitchen Garden.....        | 75     |
| Fessenden's American Kitchen Gardener     | 25     |
| Thomas' American Fruit Cultivist.....     | 1 25   |
| Field on Pear Culture.....                | 1 00   |
| Barry on the Fruit Garden.....            | 1 25   |
| Coles' American Fruit Book.....           | 50     |
| Allen on the Grape Vine.....              | 1 00   |
| Chorlton's Grape Grower's Book.....       | 50     |
| Leuchars on Graperies.....                | 1 25   |
| Saunders' Orchard House.....              | 40     |
| Pardee on Strawberry Culture.....         | 60     |
| Buist's Flower Gardener's Directory.....  | 1 00   |
| Breck's Flower Garden.....                | 1 00   |
| Johnson's Lady's Flower Gardener.....     | 25     |

Any of these Books can be sent by Post to any part of Canada, upon remitting the price and at the rate of 20 cents on the Dollar for postage.

Toronto Feb. 28, 1862.

4 t.

### BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

Toronto, 1861.

HUGH C. THOMSON,  
Secretary.

### Notice of Co-Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

### NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

### FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several pure *Durham* bull calves to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the well known *DUCHESS* tribe, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—First come, first served.

Waterdown, Nov. 14, 1861. 4-t.

### THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

JOHN SNELL,

tf.

Edmonton, P. O., C. W.

**VETERINARY SURGEON.**

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

**FOR SALE.**

**A FEW PURE-BRED SOUTH-DOWN RAMS**  
and Ewe Lambs, from

**IMPORTED STOCK,**

Selected from the Best Flock-dealers in Dorset, Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

JOHN SPENCER,  
Brooklin, Post Office,

Oct. 12th, 1861. Ontario County C. W.

**THE****JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,****FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**FOR SALE.**

**A**LOT of thorough bred **Essex Pigs**,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmor, Galt P. O., Oct. 19, 1861.

**Contents of this Number.**

|                                       | PAGE. |
|---------------------------------------|-------|
| Board of Agriculture.....             | 97    |
| Fruit Growers' Association.....       | 97    |
| Address of Condolence to the Queen... | 97    |
| Flax Culture.....                     | 98    |
| Rowan's Flax Scutching Machine.....   | 98    |
| Importance of Birds to Growing Crops. | 100   |
| Comminuted Food.....                  | 101   |
| Professor Buckman on Meadows.....     | 102   |

**HORTICULTURAL:**

|                                         |     |
|-----------------------------------------|-----|
| The Fruit Growers' Association.....     | 104 |
| President's Address to do.....          | 109 |
| Series of Questions by do.....          | 111 |
| The Culture of Asparagus.....           | 112 |
| Dwarf Apple Trees.....                  | 113 |
| Peterborough Horticultural Society..... | 114 |
| Report on Fruits, Massachusetts.....    | 115 |

**VETERINARY.**

|                              |     |
|------------------------------|-----|
| Inflammation in Animals..... | 116 |
|------------------------------|-----|

**MISCELLANEOUS:**

|                                                                                                     |     |
|-----------------------------------------------------------------------------------------------------|-----|
| The Welsh Poney.....                                                                                | 118 |
| Perseverance.....                                                                                   | 119 |
| The Tyrant Flycatcher,—Influence,—Flourence Nightingale.....                                        | 120 |
| Horrors of Swine among the Scotch,—Flowers and Foliage in doors,—Unlucky People,—Ammonia in Rain... | 121 |
| Remedy for Cold Feet—Translation of the Bible,—Smokehouses,—Walking...                              | 122 |
| A Southern Planter's Home—Existence,—The Public Health.....                                         | 123 |
| Adulteration of Articles Liable to Duty.                                                            | 124 |
| Sunset in the Highlands,—Farming in Devonshire.....                                                 | 125 |
| An Interesting Sheep Experiment.....                                                                | 126 |
| NOTICES, &c.....                                                                                    | 127 |

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
**Canadian Agriculturist.**

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, MARCH 1, 1862.

No. 5.

**The Germination of Seeds.**

The season is now close at hand when the ground has to be prepared for the reception of the seed of the various descriptions of spring crops. Every farmer or gardener is aware how much depends on bringing the soil into a proper tilth by ploughing, digging, harrowing, &c., processes which, if neglected, or imperfectly performed, will be sure to affect the bulk and quality of the crop. A certain depth of friable and finely-reduced earth, readily admitting air, warmth, and moisture, is as necessary to the growth and development of the cultivated crops as are the various ingredients of an organic and inorganic nature that constitute plant-food, and which, if it does not already exist in the soil, must be supplied artificially in the shape of what is well known under the name of manure. At present we propose to consider the earliest stage of development in the life of a plant and the conditions or agents which affect it, usually designated *germination*. A cursory view of this interesting subject will afford the practical man several useful suggestions, as well as pleasing evidence of the wisdom and goodness of creation and power.

The growth of the seed consists in the development of the germ into a perfect plant, and is known as *germination*. Supposing the conditions of growth to be favourable, the first preliminary is a softening of the coat of the seed, by which means water gains an entrance, and having pervaded the mass, causes it to swell freely. When the water reaches the germ of

the seed, the gluten or albuminous matter near to it undergoes a chemical change, and we have a very important and powerful body formed which is called *diastase*. Whether or not the germ in any way participates in this change, we have no proof; but, if not, it is certain that at least by its presence it exerts a controlling power. The same addition of moisture to any other portion of the seed would not produce the same effect, for this agent (*diastase*) is only found in close proximity to the germ, and its existence in the seed appears to be simultaneous with the first stage of germination. Upon the *diastase* thus formed devolves the important office of preparing food for the growth of the germ; for the bulk of the seed, although abundant in quantity, and exactly suitable to its constituent elements, is not ready for use until it has become soluble in water, and thus been made capable of entering into the circulation of the germ. This is accomplished by means the *diastase*, by the agency of which the necessary supplies are prepared, so long as the store of food in the seed is needed. An immediate extension of the cellular matter accompanies the entrance of the food into the circulation, and we have the external evidence of life by the sprouting of the seed. In whatever position the seed may be placed, the radicles at once strike perpendicularly down into the soil, and the tender rootlets fix themselves there with but little delay. As soon as this is effected, the gemmule grows in the opposite direction, and becomes developed into the stem and leaves of the plant.

The conditions which control the growth of seeds are, the presence of air, moisture, and warmth; and, to produce healthy germination, all are required in definite proportions. When seed is protected from these agencies it will retain its powers of growth for long periods of time. Thus, wheat, preserved in Egyptian mummies between 3000 and 4000 years, has, after the lapse of time, germinated and produced a large increase. The preservation of the power of growth is entirely dependent upon the soil being kept from those agencies which would excite its vital energy,—moisture is the first essential for germination, as it is in consequence of the chemical action excited in the seed by the entrance of water that the seed is aroused to action; and after this process of growth has been excited, if it become checked, it cannot be renewed. This shows the necessity of keeping seeds dry when they are not required to germinate. Moisture alone is not sufficient for the process of growth, as the seed requires a supply of atmospheric air to enable the necessary chemical changes to proceed. Stagnant water in the soil must of necessity be unfavorable to germination, because it renders the land cold, and excludes the free access of air, both of which conditions are prejudicial.

The exceptions to this rule are very few; one, however, may be found amongst agricultural seeds in the floating sweet water-grass (*Glyceria fluitans*), grown in water meadows, in which instance immersion in water is absolutely necessary for the growth of the seed. In this case we have a seed which has the power of extracting its supply of air from water,—a power which very few other seeds possess. The supply of air is as necessary for these aquatic seeds as for any others; for if we drive out the air from water by boiling, they can no longer germinate. For the same reason, seeds which are buried deeply in the earth remain there for many years, not because they want moisture, but because it is unaccompanied by the presence of atmospheric air. The earth raised from wells, or brought from railway cuttings, or ploughed up by a furrow of extra depth, often becomes covered by a growth of vegetation, the produce of seeds which have long been dormant in the soil.

Warmth is another essential condition of germination, which, within moderate limits, is rendered more rapid by an increase of tempera-

ture; but it must be accompanied by a proportionate increase of moisture, otherwise it becomes destructive. The action of heat promotes chemical changes in the seed, but a free supply of water is necessary, not only that it may exert a like chemical influence, but also because it enters largely into the most delicate body into which the dry matter of the seed has to be transformed. Thus we see that healthy germination depends upon the combined action of the three agents—heat, water, and air.

The opinions which are entertained respecting the influence of light are conflicting. Some consider that light retards the process of germination, whilst others consider that it does not influence it prejudicially. The experiments which have been made, although far from conclusive, are calculated to favour the former opinion; for the growth, although equally perfect, has not been so rapid under the action of light as when the seed has been covered from it. We know that, as soon as the seed has made sufficient growth to throw out its leaves, the action of light is favourable, its presence enabling the plant to decompose carbonic acid and to retain the carbon for its own, whilst the oxygen is thrown off into the air. But at this earlier stage of existence,—or, in other words, during the period of germination, growth is favoured by an action *just the reverse* of this. The seed and its sprouts want to absorb, not to throw off oxygen, and to emit instead of taking in carbonic acid. During germination, then, the action would tend to paralyze the vital powers of the seed, and limit its growth to the hours of darkness instead of allowing the development to be continuous. Another great advantage gained by covering the seed is the more equable supply of moisture which is preserved beneath the surface, as well as the better opportunity afforded to the roots for firmly fixing themselves in the soil. Those who are practically engaged in conducting the operations of the farm or garden may gain much insight into these interesting but somewhat intricate matters, by frequent and accurate observations, from the sowing of the seed, through all the successive stages of its development to the perfect maturing of the crop, and comparing the results obtained with the principles laid down by the teachings of chemical and physiological science.



### Agricultural Hall, Toronto.

This building occupies a plot of ground on the North side of Queen Street, at the corner of Yonge Street, and as it is situated in one of the principal thoroughfares of the city, public curiosity may be gratified by a sketch of the design. We have been favoured with a sight of the plans and elevations, and the following description (drawn up on the supposition that the building were completed, which it will shortly be) will be found pretty accurate :—

The front to Yonge Street is 41 feet in length, and the façade to Queen Street is 82 feet. It contains on the ground floor—at the angle of the two streets—a substantial and excellent warehouse, for the sale of seeds, plants, &c., with a smaller store entering from Yonge Street, which will be rented to a suitable party. The Entrance to the Offices and museum is in the centre of the Queen Street front, whence a large and roomy staircase leads to the first floor, on which is the Board room, lighted by two large windows on the Yonge Street front, Secretary's room, and Porter's room, also a large and commodious store room, connected with the seed store on the ground floor. The entire of the upper floor is in one large apartment., the internal dimensions of which are 79 feet in length, by 38 feet in width. The side walls are 19 feet in height from the floor to the top of cornice. The roof is in one span, the framed trusses being wrought, having curved wall-braces springing from moulded and carved stone corbels. The ceiling rises from the side walls at an angle of about twenty-seven degrees, being in the centre 25 feet from the floor to the ceiling. It is divided by moulded ribs into panels, with plaster mouldings and enriched centre pieces, which are perforated for ventilation. This spacious apartment is intended as a museum, for agricultural implements, patented inventions, and other articles connected with agriculture, and open to the public, free of charge. This it is considered will be a great boon to farmers and others, interested in the progress of agriculture, where the utility and economy of the several implements exhibited may be studied.

The building is constructed in the Italian style of architecture. The principal fronts are faced with the best red pressed bricks, and the

ornamental masonry and other dressings are of Ohio stone. The entrance door,—which, as already remarked, is in the centre of the Queen Street front—has rusticated and moulded stone jambs, semi-circular head, with radiating rustics. On either side of the door-way are two windows with semi-circular stone heads. Over the ground floor windows there is a bold belting course, which will be enriched by parti-coloured mosaics, a system of decoration which we believe has never been attempted in this country, although in English and other European cities, it is much used for external and internal decorations. The windows of the first floor rest on moulded sills, with small cast iron balconies in front of them, the windows having stone jambs and massive cornices. Over these are moulded consoles, supporting the balconies, in front of the upper row of windows, which are finished with handsome stone facings; the whole being surmounted by a bold and enriched cornice, producing an excellent effect. While the general symmetry is well preserved, the disposition of the windows, and the great proportion of solid wall, contribute to give the building a massive character. In this respect alone the design exhibits some novelty and piquancy, particularly in the centre compartment, where the five openings are brought pretty closely together, leaving a large pier on either side of the adjoining opening. Thus the front may be said to be divided into three main compartments, the centre being greater than the other two, which assume the appearance of wings; producing a good architectural contrast, combining solidity and strength—yet without either blankness or heaviness. The plans of the building have been furnished by Mr. Joseph Sheard, architect, under whose superintendence the works are being carried out. The contractors are, for the brick-laying and masonry, Mr. John Platt; and for the joiner and carpenter work, Mr. John Harmer. The painting will be executed by Mr. Alexander Hamilton. The whole expense of the building will not exceed the original estimate of \$12,400.

The principal object of the Board in erecting this capacious and commodious building is to secure a permanent office for the transaction of its increasing business; much inconvenience having been hitherto experienced from inadequate accommodation, and frequent removals.—

In the preamble of the Agricultural Statute, 20 Vic., cap. 32, among the objects which the Board is required to promote, is the establishment in Toronto, of a public Library of reference, comprising both agricultural and horticultural publications, and also a Museum, embracing both those departments of industry. The former has already, to some extent, been accomplished, the nucleus of a library having been formed; but for want of adequate accommodation of a permanent nature, the latter has necessarily been kept in abeyance. It is intended that the capacious Hall set apart for a Museum, shall comprise characteristic specimens of the natural as well as the cultivated productions of Canada; implements and machines, or their models; specimens of soils, and their related rocks and minerals; with whatever can throw light on the agricultural condition and capabilities of the Province. The Board will therefore have to appeal to farmers and others interested in these important objects, (and who is not?) to assist in carrying them to completion. Our agricultural Societies should see that the choice productions of their respective localities are represented in this collection; and horticulturists it is hoped, will follow their example. The firm of James Fleming & Co., will always keep an extensive and reliable assortment of all kinds of agricultural and garden seeds, suitable to this climate; and they intend, we understand, to form a Depot for the various implements and machines belonging to the departments of industry. Numbers will doubtless visit the Agricultural Hall for purposes of business or enquiry, and there can be little doubt that this new enterprise of the Board will be found in its practical working of great general convenience and public advantage.

### An Experiment of Wheat Growing in 1766.

In the *Gentleman's Magazine* of May 1770, the following statement appears of the wonderful power of increase which the wheat plant possesses when subjected to extraordinary treatment:—

"In the autumn of 1765 and spring of 1766, Mr. Miller, of Cambridge, produced 2000 ears of wheat from a single grain, by dividing and transplanting it. He repeated his experiment in June, 1766, with yet greater success.

"He sowed on the 2nd of June some grains of the common red wheat; on the 8th of August he took up a plant and divided it into eight parts, each of which he planted again separately; by the middle of September they pushed out several side shoots, and were again divided into 67 plants; these plants remained through the winter, and were then divided into 500; they soon became stronger than many in the wheat-field, and some of them produced 100 ears from a single root. Many of the ears were 7 inches long, and contained between 60 and 70 grains. The whole number of ears produced by this process from a single grain was 21,109, which yielded three pecks and three quarters of grain, and the number of grains being about 576,800.

### The Provincial Exhibition of 1862.

The Local Committee for the Provincial Exhibition at Toronto this year have been appointed, and have already held several meetings. The committee consists of the following gentlemen:—

F. W. Jarvis, Esq., Sheriff York and Peel; J. P. Wheler, Esq., Warden, York and Peel; J. G. Bowes, Esq., Mayor of the City of Toronto; Hon. G. W. Allan, President Toronto Horticultural Society; Jas. Beachall, Esq., President Toronto Electoral Division Agricultural Society; The President of the Mechanics' Institute of Toronto; Aldermen Brunel, Carr, Strachan, and Hynes; Professor Croft; Professor Hind; Captain Shaw; Arch. Barker, Esq., Markham; J. P. Bull, Esq., York township; together with all the members of the Board of Agriculture, *ex-officio*. Chairman of the committee, Hon. G. W. Allan; Secretary and Treasurer, Wm. Edwards, Esq. The committee have commenced work energetically, and we hope that those on whom the exhibition must mainly depend for the material elements of success, we mean the producers of the country, the stock breeders, farmers, gardeners, mechanics and artisans, will not be behind hand in their preparations to carry out their part of the programme.—The Prize list will be published as early in the season as possible, but in the mean time the lists of previous years will serve very well as a guide. The subjoined letter from Mr.



Denison, who is on the committee as a member of the Board of Agriculture, will give some idea of the preparations the Local Committee propose making.

## PROVINCIAL AGRICULTURAL ASSOCIATION.

TORONTO LOCAL COMMITTEE.

### *Editors of Agriculturist,*

Farmers who intend to exhibit at the Provincial Agricultural Show this autumn at Toronto will be glad to learn, that extensive preparations are being made, to accommodate stock, far beyond any ever before prepared at such exhibitions in this country.

1. *Horse Stables*.—Four buildings to be erected in the form of a quadrangle, each building to be 130 feet by 30 feet, and 12 feet high, and divided into double and single stalls. Doors well hinged and furnished with hasped staples,—exhibitors to furnish their own locks. These stables are to be permanent and well lighted and ventilated, and are to be built with the view of accommodating cavalry and artillery in case of necessity.

2. *Cattle Stables* are to be also four in number, 150 feet by 30 feet and eight feet walls. These buildings are to have an eight foot passage through the centre which will leave the stalls 11 feet deep on each side, the outer walls and partitions are to be only 3 feet 6 inches high—the walk down the centre to be raised 2 feet to give a commanding view over the stock. These stable are calculated to hold 26 Durham bulls, 20 Down bulls, 12 Ayrshire bulls, 12 Galloway bulls, and 5 Hereford, 60 Durham cows and heifers, 50 Devon, 30 Ayrshire, 30 Galloway, 20 Hereford, altogether 265 stalls. This building also to be permanent.

3. *Sheep Folds*.—A building 900 feet long, 12 wide, and 7 high, divided into 150 pens, to accommodate 600 sheep, the whole to be covered and partitioned 3 feet high, with movable bars in front, to put the sheep in or take out.

4. *Pig-Pens*.—This building is to be covered and divided into 150 pens 6 feet square, calculated to hold 300 pigs.

5. *Poultry*.—This shed is to be 100 feet long and 12 wide, and the walls are to be 7 feet high, open all around, and to be furnished with two rows of coops down the centre, and three coops high, with lattice fronts, and furnished with doors.

6. *Machine Shed*.—This building is to be 256 feet long, 32 feet wide, and 12 high, good shingle roof, and strongly framed, to stand on cedar posts without sills, to be open and accessible on all sides, and fitted up with a line

of shafting at least 50 feet long, and to be a permanent building.

7. *Forage Barn*.—To contain hay and straw, and fitted with bins for bran and oats, and to be convenient to the other buildings.

8. *Hurdles*.—There will be in addition to this accommodation, sufficient hurdles on the ground to make a hundred pens if required.

It is intended by the local committee, if not by the Corporation, to enclose 8 or 10 acres of land more than we had under fence at the last Exhibition in Toronto. This of course will afford ample room for every purpose, and make the show ground a more convenient shape than before.

Before closing I would advise all friends of the Agricultural Association who have suggestions to offer with regard to the prize list for the current year, to do so at once, before the prize list committee set to work to revise. These suggestions should be forwarded to the Secretary of the Board of Agriculture, Toronto.

It is much to be desired that we have a good show this year. The country never was so full of good stock before, and prosperity is fast returning; indeed we were never in a better position to get up a good show than now. The location is central and accessible, having Rail Roads and Steamers in all directions, the heart of an old settled country, well filled with good stock and good farmers, and nothing can prove a good farmer better than giving a hearty support to our own peculiar Institution, the Provincial Agricultural Association of Upper Canada.

I think I need not apologise for the length of this letter, for the information will be gladly received by your readers.

Yours truly,

RICHARD L. DENISON.

Dover Court, Toronto, Feb. 1862.

### Maple Sugar.

This is the season for making maple sugar; and this industrial product is of considerable importance in some sections of the country, and might be made of much more value if due attention were paid to the processes of manufacturing and refining. A really excellent and highly palatable description of sugar, almost as white as the best loaf, may be made from the sap of the maple, by the exercise of proper skill and care in these particulars. The following article on "Clarifying," one of a series on the "Importance and best mode of manufacturing maple sugar,"

written by Hon. S. F. Perley, of the State of Maine, for the *Maine Farmer*, will be found to contain some useful suggestions :—

#### CLARIFYING.

When the sediment has well settled, draw off carefully, by a faucet, all the clear syrup from the "settling tub;" leaving the residuum to be diluted with sap, which reduces its specific gravity, when the sediment will be more thoroughly precipitated, and the clear sap, after a few hours, can be drawn off and returned to the boilers, to be included in the next batch; thus making a saving of nearly all the sweet, and rejecting the dirt. The clear syrup may be now poured into the graining kettle; and to a quantity of syrup which will make sixty pounds of sugar, add about one quart of skimmed milk for a clarifier, and thoroughly intermix the two by stirring. The white of eggs well beaten, bullock's blood diluted with water, and other albuminous substances may be used for clarifying; but upon the farm, milk is most easily obtained, is the cheapest, and best. Skimmed milk, if sweet, is equally as good as new milk; for it is the caseine, or curd, acting mechanically by entangling the fine particles of dirt, which the former strainings have not removed, that give it its value as a clarifier. Now place the graining kettle with its contents over a slow fire, and gradually heat the syrup to near the boiling point. This curdles the milk, and as the curd forms it embraces the impurities still remaining; and the curd, by the increasing heat, becomes specifically lighter than the syrup, and eventually floats upon the surface in a thick, somewhat tenacious scum. Care should now be exercised to prevent ebullition, as that would break up the sum, and the action of boiling would carry much of it down to be again mingled with the mass. Now swing it from the fire, and allow it to remain undisturbed an hour, more or less; during which time a great part of the feculencies will attract each other and rise with the scum. The scum is to be carefully removed with a fine skimmer; to draw the syrup from beneath the scum with a syphon, or stop-cock, would be a better way, for then there would be no disturbance, as in the case of using the skimmer; but this would be attended with some inconvenience and expense. Here, again, economy demands that the scum, which has so much sweet in it, should not be cast away; but be placed in a tub and diluted with sap, the allow it to settle a few hours; after which, the sap, much sweetened by the process, may be poured off and returned to the boilers. It is found by considerable experience, that, with the utmost care, the curd and dirt cannot be entirely removed by the skimmer; consequently, resort must be again had to the flannel

strainer. This last straining is usually omitted by sugar-makers, but it is quite important, if a clean, pure, sugar is wanted. A still better process would be to filter the syrup through animal charcoal, (bone black,) as is done in cane sugar refining; for by this process not only the dirt, but all coloring matter, would be removed, which would greatly improve the appearance of the sugar. Bone black, however, cannot be readily obtained in country towns; and the expense and trouble in procuring and using it would hardly be compensated where only a small business is carried on, as is the case in most of the sugar orchards in Maine. If any one desires to experiment in this direction, a filter made of finely pulverized and thoroughly washed wood charcoal will serve as an imperfect substitute for one made of bone black. So late as 1811, wood charcoal was exclusively used in refining syrups; at which time the superior quality of animal charcoal was discovered, and the former soon went out of use. But, by the use of the milk clarifier and the flannel strainer, a very fair sugar for home use can be made; and the ease with which these articles can be procured, and the simplicity of this process of manufacture, commend this method for general adoption.

The first boiling or "turning off," as it is termed, is simply reducing the thin syrup, by boiling, until it is of suitable consistence to be used as a table syrup, like that from refineries; or until it will granulate in sugar. No uniform rule for the consistency of syrup prevails; each maker adopts a standard to suit his own private taste; or else, taking counsel of his cupidity, he refrains from reducing it to a rich, honest, heavy syrup, so that he may have the greater number of gallons to market. Accordingly, much of that offered for sale will pour like water, when it should have the weight and consistency of good W. I. molasses. It should be reduced almost to the graining point, which can only be determined by cooling a small quantity in a saucer or other vessel, and testing it by sight and taste. A first quality syrup will grain a little after straining a few weeks.

To produce sugar, still further boiling is necessary, and the precise point at which the boiling should cease is an item of experience, more easily recognized in practice than described. Several tests are relied upon, some of which are as follows: 1st, where the steam forcing its way up through the foaming mass, on reaching the surface, escapes by bursting its bubble with a slight explosion, similar to that observed upon hasty pudding when nearly cooked: 2d, when a small quantity, say a table spoonful, taken from the kettle and poured hot, upon a compacted snowball, after melting the snow a little, will lay upon



3d, when a drop taken hot from the kettle, on being let fall from the edge of the skimmer or spoon into one inch of cold water will pass directly through the water without mingling with it, and rest upon the bottom in the form of a flattened hemisphere: 4th, when a drop taken upon the finger on being touched by the thumb will draw out a thread from one-fourth to one-half an inch long: and 5th, when a small quantity taken into a saucer or spoon, and thoroughly cooled, will granulate, so that it can be detected by the eye, the taste, or when crushed between the teeth; then it may be removed from the fire for "it is done." These tests, particularly the 3rd and 5th, are useful to beginners as aids in forming a correct judgment; but one long practised in the business seems, intuitively, to recognize the time when the grain will form, and the boiling should cease.

The liquid sugar may now be "turned off" into vessels to cool and granulate. If a fine grain is desired, rapid cooling in shallow pans, with rapid stirring while the crystals are forming will produce the result. If coarse sharp crystals are preferred, leave it undisturbed, in larger quantities until the crystallization is completed. There will be a portion which will not granulate, but will remain as dark coloured molasses filling all the spaces between the crystals of sugar. The quantity of this varies with the season, being greatest near the close; and varies somewhat in different seasons, owing probably to the varying quality of the sap, and the skill used in the process of manufacture.

To obtain a dry sugar, after the granulation is completed, throw the whole into a tub or barrel, prepared for the purpose by boring the bottom with several holes, these holes to be closed until the crystals are well compacted together, say one or two weeks; then remove the plugs and allow the molasses to drain away. The draining will be more perfect, and consequently the sugar of lighter colour, if a wet cloth is spread upon the surface of the sugar, and renewed daily until the draining is completed. The moisture from the cloth, gradually settling down into the sugar, dilutes the molasses, rendering it more liquid, and of course it passes away more thoroughly. A little of the sugar becomes dissolved and carried away by the descending water, but this is not lost, as it mingles with, and becomes a part of a very good molasses. The draining should be done in a warm room, for heat also renders the molasses more liquid and the draining more perfect.

Instead of barrels or tubs with perforated bottoms, inverted pyramidal, or hopper-shaped boxes are sometimes used in draining. These boxes may be 12 or 15 inches square and open at the top, by two inches square and

it without diffusing itself through the ball: closed at the bottom, and three feet long; with a hole at the smaller end for the escape of the molasses; to be suspended like a hopper. These are better than those barrels, for the reason that the quantity of sugar near the bottom, where the drainage is always imperfect, is comparatively small.

Thus we have a crude sugar equal in every respect to the corresponding grade of cane sugar; and superior to it in this, that we know it has been prepared under circumstances far more favourable to cleanliness than exists on Southern plantations, where the operators are driven to their tasks, and care only to avoid the dreaded lash.

It was my intention to offer some suggestions upon the subject of refining, a branch wholly distinct from the manufacture of crude sugar; but the undue length to which the subject has already extended leads me to forbear a further trespass upon your columns. I stop here the more willingly from the fact that the further process of refining, adds nothing to the real value of the sugar, but rather the reverse; for by it weight, and the peculiar maple flavour are, in a measure, sacrificed for an improvement in colour.

### Osier Willow.

To H. C. THOMSON, Esq.,

*Secretary, Board of Agriculture.*

DEAR SIR,—The following paper on the culture and management of the "Osier Willow" has been reprinted in England from the *Rural New Yorker*. It is a subject which every common farmer may easily understand, and there are hundreds of places in Canada well adapted for planting the Osier Willow with success and profit; therefore, without further preface, the following is a copy of the printed paper:—

"Having lately seen several inquiries respecting the Osier Willow and its culture, and being asked almost daily, 'Do you think it will pay?' I have concluded to send you my experience in its cultivation. Three years ago this spring after corn-planting, I set two acres of the French Osiers, placing them in rows three feet apart, at a distance of one foot from each other; the first year I cultivated and hoed the same as corn, and many of the shoots attained the height of four feet. The next spring I cut them, but having no machine for peeling lost the crop, except a few used for sets. Last spring I cut, and commenced peeling by hand, which I found rather an uphill business, and almost resolved to abandon their culture if they must be peeled in this way. About this time a machine was invented for peeling willows. I immediately procured one, which worked to my entire satisfaction, and with it finished peeling my crop, which when ready for market, in-

cluding some sold for sets, a little exceeded a ton. These I shipped to a Commission Agent in New York, and received for them \$110 per ton. This year I have a much heavier crop.—For an experiment I have weighed those cut from 12 stools, which amount to 18 lbs. I have found in peeling and drying they waste nearly one half. The produce of an acre stands thus: 14,520 stools per acre  $\frac{3}{4}$  lb. each, 21,780 lbs.—Ready for market,  $5\frac{1}{2}$  tons, \$110 per ton, \$605, cost of cutting per acre, \$6; cost of peeling per ton, \$7, \$38, binding and taking to market, \$5 $\frac{1}{2}$  per ton, \$27, total, \$72. Deducting expenses, this leaves a profit per acre of \$533.”

“According to directions at the time I planted, I have not cultivated mine since the first year, but think they should be cultivated once every spring, to loosen the soil and keep them free from weeds and grass. I am confident that any one who has suitable ground and will bestow proper cultivation can realize this amount from an acre of willows, perhaps more. After reading these facts I think no one can hesitate to answer the query, will it pay?”

The foregoing computation shews a liberal profit on the experiment. Is it not worthy the consideration of the Board of Agriculture to offer a scale of prizes for the encouragement of the cultivation of the Osier Willow? The season for planting being very convenient, about the same time of planting Indian corn, there is scarcely a farm in Upper Canada without a low swampy plot, which, with open drains, may easily be made fit for its successful cultivation.

The premium should not be less than for one acre, the cultivation to be certified by the President of the County Agricultural Society, where in the plantation is situated.

Your obedient servant,

J. B. MARKS.

Bath, England, Feb. 1862.

### Experiments on Manures.

A short time ago some experiments were published in the *Gardeners' Chronicle* in reference to the beneficial action of coprolites (ground to an impalpable powder) on swedes, in comparison with other manures. The results have, contrary to the opinions of myself and others, induced me to try similar experiments on swedes, the result of which I now lay before your readers. I quite agree with Dr. Voelcker in saying that very little good can be obtained from the result of a single experiment, but often a great deal of harm; and with this view of the case, I intend pursuing the same experiments for several years to come, as I think it is the duty of every one who holds a similar position to myself to do all in their power to connect science with agriculture, and I shall be very glad to join any person in making agricultural experiments who is situated in a different part of England, so as to be able to arrive at more satisfactory conclusions.

The ground experimented on was lately a very old and badly drained piece of pasture to which, after being well drained, salt was applied at the rate of 25 bushels per acre. The field was then ploughed and harrowed in the usual manner, and divided into two parts of  $4\frac{1}{2}$  acres each. On the one half oats were sown, and on the other mangels and swedes drilled in with superphosphate of lime leaving the width of one drill across the field unmanured. Out of this one drill was divided six plots side by side, measuring 4 by 3 yards, each containing eight drills. The plots were manured and sown on the 13th May, 1861, as follows:—

|                                                      | Cwt. per acre. | ton.        |      |   |        |
|------------------------------------------------------|----------------|-------------|------|---|--------|
| No. 1. B. nedust at the rate of $2\frac{1}{2}$ at £8 | 0              | equal to £1 | 0    | 0 | 0      |
| 2. Ground coprolites....                             | 5              | “           | 4    | 0 | “      |
| 3. Unmanured.                                        |                |             |      |   | 1 0 0  |
| 4. Ground bone-ash....                               | 4              | “           | 5    | 0 | “      |
| 5. Superphosphate, ETK's 3                           | “              | 6 10        | “    | “ | 0 19 6 |
| 6. Dissolved coprolites....                          | 3              | “           | 6 10 | “ | 1 19 6 |

The soil was in a fine state of division, the weather dry, and the manures in a finely powdered state, and well mixed with ground ashes before being drilled in with the seed. On the 18th inst. the seed had all appeared above ground and very regular. On June 3rd the plants in each plot were looking well, but those in No. 2 were decidedly the most forward, and those in No. 3 the most backward. Plots 5 and 6 appeared equal throughout the season, and all were treated in the ordinary manner. The amount of phosphate of lime per cent. in the manures used were as follows:—

|                                                                |                |
|----------------------------------------------------------------|----------------|
| In No. 1. Bone dust, 55.35 per cent. phosphate of lime.        |                |
| “ 2. Coprolites, from 60 to 61 per cent. do.                   |                |
| “ 3. Bone ash, 67 per cent. do.                                |                |
| “ 5. Superphosphate, 18.59 soluble and 2.40 insoluble          | } 21.03 total. |
| “ 6. Dissolved coprolites, 21.75 soluble, and 10.35 insoluble, | } 32.10 total. |

On looking at the above we find that

| cwt.                                                                       | lbs.             |                  |
|----------------------------------------------------------------------------|------------------|------------------|
| 2 $\frac{1}{2}$ of bone dust per acre is equal to 165 of phosphate of lime |                  |                  |
| 5 of ground coprolites                                                     | 336              | “                |
| 4 of bone ash                                                              | 800              | “                |
| 3 of sup rphosphate                                                        | 70 $\frac{1}{2}$ | (mostly soluble) |
| 3 of dissolved coprolites                                                  | 77 $\frac{1}{2}$ | “                |

Thus showing the preponderance of insoluble phosphates in Nos. 1, 2, and 3, or the natural manures. All the plants are a great deal too green, and were attacked by mildew just before being pulled and cleaned on the 12th of October. The number and weight of the roots in each plot, with the weight per acre, was as follows:

| Plots. | Manure used.                                   | Rate per acre.  | Weight of roots in plot. | Number of roots in plot. | Average per acre. |
|--------|------------------------------------------------|-----------------|--------------------------|--------------------------|-------------------|
|        |                                                | Cwt.            | lbs.                     |                          | Tons. cwt.        |
| 1      | Bone dust.....                                 | 2 $\frac{1}{2}$ | 114                      | 60                       | 20 3              |
| 2      | Coprolites ground to an impalpable powder..... | 5               | 112                      | 54                       | 20 0              |
| 3      | Unmanured.....                                 | ..              | 102                      | 51                       | 18 0              |
| 4      | Bone ash.....                                  | 4               | 123                      | 52                       | 22 0              |
| 5      | Superphosphate....                             | 3               | 124                      | 56                       | 22 6              |
| 6      | Dissolved coprolites....                       | 3               | 132                      | 58                       | 23 15             |
|        | Average.....                                   | ..              | 118                      | 55                       |                   |

From the above statement it will be plainly



seen that the swedes were most benefitted by the manure which contained the largest amount of phosphate of lime rendered soluble by means of sulphuric acid, although the total amount of bone earth (insoluble phosphates) was less in Nos. 5 and 6 than in Nos. 1 2, and 3, more especially in No. 2. The whole of these experiments were superintended by myself with every possible care, so as to avoid any error. The greatest objection to the above experiment was the small quantity of ground experimented on; therefore next season I intend allotting one-eighth of an acre to each experiment. In conclusion, I may mention that the season was generally fine, not much rain having fallen until after the roots were about two-thirds grown.—E. T. KENSINGTON, F. C. S.—*Gardener's Chronicle*.

### Insects the Past Year.

The following letter of Dr. Fitch to the Directors of the New York State Agricultural Society, and published in the last number of their monthly journal, will be found to contain much useful and interesting matter.—Eds.]

Gentlemen:—The past year has furnished an unusual amount of important material for investigation in the department in which I am occupied. And I had contemplated with much satisfaction, the account of the year's researches which I should have to present in this address at the annual meeting. I will endeavour to hastily sketch the leading topics I had intended to speak of, and if you deem this will be of any interest to the meeting, it may be read as some amends for my non-appearance.

The insects with which my attention was most occupied the past year, were the grain aphid, the army worm and the wheat midge.—And I will aim to notice some of the more important facts that have been thus come to with respect to these insects.

The first of these, the grain aphid, made its advent in a most remarkable manner. That an insect never seen before and not known to be present in our country should suddenly be found everywhere in New England and most of the state of New York, in profuse numbers in every grain field of this wide extent of territory, and literally swarming upon and smothering the crop in many fields, was a phenomenon which probably has no parallel in the annals of science. How it was possible for this insect so suddenly to become thus astonishingly numerous, was a mystery which seemed to most persons to be inexplicable. It is the most prolific of any insect which has ever been observed. I find it commences bearing when it is but three days old, and produces four young daily. Thus the descendants of a single aphid will in twenty days amount to upwards of two millions, each day

increasing their number to almost double what they were the day before. This serves to account for the surprising numbers which we had of this insect.

The aphid was everywhere supposed to be a new insect, and one writer went so far as to name and describe it scientifically, in full confidence that the world had never before known anything like it. My examinations, however, fully assured me that it was identical with a species which has long been known in the grain fields of Europe. And on my announcing this, the erroneous views which one and another were adopting, were speedily abandoned.

Our best European accounts of this insect, however, are very imperfect. They only speak of it as occurring in June and July, whereas I find it is present on the grain the whole year round. And when the grain is but a few inches high, if half a dozen of these insects happen to locate themselves on the same plant, they suck out its juice to such an extent that the plant withers and dies.

As yet I have never been able to find a male of this species. They are all females. This is proved by placing any one supposed to be a male in a vial; next morning too or three young lice are always found in the vial with it. The general habits of insects of this kind are well known. The aphid on the apple and other fruit trees, when cold weather arrives, give birth to males. The sexes then pair, and the female thereupon deposits eggs, which remain through the winter to start these insects again in the following year. I had supposed it would be the same with this aphid on the grain. I thought, when autumn arrived, I should meet with males and find eggs dropped on the blades of the grain. But there were none. The females and their young continued to appear on the grain till the end of the season. They are everywhere on the grain now, buried under the snow, ready to warm into life and activity again when the spring opens. And on grain growing in flower pots, on which I am keeping these insects in full activity through the winter to notice what I can of their habit, no males have yet appeared. When, and under what circumstances this sex will be produced, is a most curious subject, still remaining to be ascertained. It at present looks as though the female and their descendants were prolific permanently, without any intercourse of the sexes.

Last summer, such multitudes of parasites, lady-bugs and other destroyers of this aphid, had become gathered in the grain fields at harvest time, that it seemed as though it would be exterminated by them. But at the end of the season, this insect appeared as common on young rye as I had noticed it at the opening of spring. The present indications, therefore, are that this aphid will be as numerous on the grain the coming summer as it was the past, if the season proves favourable to its increase.

As to the *army worm*, it may be remarked that for almost a century it had been known that in this country was a kind of worm whose habit it was to suddenly appear in particular spots in such immense numbers as to wholly consume the herbage over an extent frequently of several miles, and then abruptly vanish, nothing being seen of it afterwards. Thus it was one of the most singular and almost one of the most formidable and alarming creatures of this class that was known to be in the world. Yet, what kind of worm this was, and what insect produced it, remained wholly unknown down to the present day. Appearing here and there all over the country, the past season, this army worm became the object of the deepest interest; and from Illinois on the one hand and Massachusetts on the other, specimens of the moths bred from these worms were sent to me, for information as to what the name of this insect really was. To these inquiries I was able to give an answer so full and explicit that there has been a general acquiescence in the correctness of my decision on this subject.

With regard to the *wheat midge*, I would observe that, in a lecture before the Society a few years since, I stated that in this country injurious insects were much more numerous than in Europe, occasioning us far greater losses than are there experienced. I was assured of this fact from carefully comparing the statements of foreign authors respecting the depredations of particular insects, with what we know of the same insects here. But I did not suppose it would be possible to show by any more decisive proof that the facts were as I stated. A year ago, however, I received from France a vial filled with insects as they were promiscuously gathered by the net in the wheat fields of a district where the midge was doing much injury. It then occurred to me that, by gathering the insects of our wheat fields here in the same manner, it would furnish materials for a very accurate comparison of the wheat insects of this country with those of Europe. As the result of a comparison thus made, I find that in our wheat fields here, the midge formed 59 per cent. of all the insects on this grain, the past summer; whilst in France, the preceding summer only 7 per cent. of the insects on wheat were of this species. In France, the parasitic destroyers of the midge amounted to 85 per cent.; while in this country, our parasites form only 10 per cent. And after the full investigation of the subject which I have now made, I can state this fact with confidence—we have no parasites in this country that destroy the wheat midge. The insect so common on wheat, and which resembles the European parasites of the midge so closely that, in the New York Natural History, it is described as being one of that species, and in the Ohio Agricultural Reports it is confidently set down as another of them,—I find has nothing to do with the wheat midge, but is the

parasite of an ash gray bug which is common on grain and grass, laying its eggs in the eggs of this bug, and thus destroying them.

In my lecture a year ago, I stated to the Society that the wheat midge had wholly vanished the previous summer; not one of its larvae could I find, on a careful search over an extensive district around me. But the past season this insect appeared in the wheat again, as numerous as usual. This has led us into important changes in our views of the habits of this insect. How was it possible for it to utterly disappear from the wheat one year, and be back in it in swarms the next year? Obviously it must have other places of breeding than in the wheat. And, therefore, if no wheat was grown in this country for a few years, as has often been proposed, it would not starve and kill out this insect. The insect would resort to these other situations, and would sustain itself there, returning into the wheat again as numerous as before, when its cultivation was recommenced. And what could it be that banished this insect from the wheat in 1860, and brought it back again in 1861? The remarkable difference in the weather of these two years furnishes an answer to this question. When the midge fly came out to deposit its eggs in June, 1860, the weather was excessively dry; in 1861, it was very wet and showery. And thus we learn the fact that these flies cannot breathe a dry, warm atmosphere; they are forced to retreat to places where the air is damp and moist. When the uplands, the plowed fields, are parched with drouth, the midge cannot abide in them; it must go to the lowlands along the margins of the streams, where it must remain so long as the drouth continues. Here it must lay its eggs and rear its young, depositing them probably in the grass growing in these situations. And hence we also learn, that if the last half of June is unusually dry, our wheat that year will escape injury from the midge; but if the last half of June is very wet and showery, this crop will be severely devastated. Time forbids my pursuing this subject further.

Yours truly,

ASA FITCH.

(From the Mark Lane Express.)

### Experiments on the Potato Disease.

So multifarious and vague have been the notions of this widely-spreading disease, that it has now become almost habitual, especially in rural districts, to regard a solution of its supposed vagaries as hopeless, and a moderation of its active progress as an absolute impracticability. Now, however, that it has assumed so considerable an importance in a social, moral, medical, economical, and even political point of view, we are impressed with the desirability of divulging the results of a series of investigations on the nature of the disease, the laws it observes, and



the modification of which it, at present, admits. Some 14 or 15 years have elapsed since this intractable disease was by some ill-fated importation brought to our flourishing crops, and from one or more as yet unascertained focuses, swept over this and the sister-isle, dealing uneasiness and sorrow to every abode, from the princely hall to the hutch of the beggar. Speculations innumerable have spent their influence in complicating the matter, and in disheartening many a noble aspirant in the cause; but soon, we hope, we shall be able so to simplify (by accumulation of facts and well authorised inferences) its presumed abstrusities as to render its leading features encouragingly familiar to all. System is essential to the success of the least complex of investigations, and remindful thereof, must the twin sisters Theory and Practice co-operate, otherwise the inductions of the one will be nullified by the more tangible evidence of the other, and all their essays end in irrespondence and confusion; and, with the latter views at heart, we have been actuated, through a series of years, to an attentive study of the potato disease, and have well satisfied ourselves (as botanists have before) that it consists of a fungus, and for the following reasons:—

1st. There exists, without exception, on every diseased leaf, a parasitic fungus, visible as a slight mould, to the unaided eye, and forming a beautiful microscopic object.

2nd. The same fungus is discoverable in the diseased tubers, and in the soil contiguous to the spot on which the latter rotted.

3rd. A like fungus has, we believe, never yet been demonstrated on the healthy haulm, or tubers.

4th. This fungus, when carefully removed from the diseased leaf, and transferred to the substance of the healthy tuber, will (in from four to eight days) *cateris paribus*, originate the specific disease therein at the point of inoculation.

5th. With this fungus in your hand you may infect the haulm of a flourishing crop at pleasure.

6th. All remedies, of any practical value in checking the disease, are reconcilable with its fungoid origin.

7th. All the so-called vagaries of the disease, resulting in its attacking one and not another bed, one part in preference to another of the same bed, now spreading slowly and again swiftly, or even leaving your crop comparatively intact, are readily explained by the laws which regulate fungoid development, and referable to the active or passive migration of the seeds of the fungus (botanical spores) being interfered with by local peculiarities of site; or to their germination being checked or permanently arrested by atmospheric or telluric agencies of limited operation. To popularize a fungus, what is it? A vegetable of the humblest structure, "a miniature mushroom," that in every

instance springs from a parent fungus, often leading an independent existence and obtaining a considerable magnitude, as the meadow mushroom, puff-ball, &c., &c.; but, so disposed to play the parasite, that nearly "every earthly thing" is infested with its fungus; a few—to wit, the human teeth, tongue, throat, and respiratory organs, the "wounds of living men," the helpless caterpillar—may have all organic structure transformed to an exuberant fungus; the wheat, barley, and other cereal crops may be annihilated by their respective funguses; and the mellowing of fruits, their last chemico-vital process, is one preparatory to their decay by the fungus. A fungus differs from all other vegetable structures, in having nearly the whole of its substance composed of reproductive matter, and in effecting its generation by means of minute variously-shaped and tinted bodies, called spores, and which differ from seeds in possessing the capacity of germination from any part of their circumference to which favorable co-existence of heat, air, and moisture, may be presented; whereas a seed can only germinate from one constant point.

We will now pass in brief review the several plans that have been proposed, and had their value tested, for the prevention of the potato disease, viz., the following:—

The method of Mr. Hardy.

do. the C. of Hornsey.

do. The Russian Professor.

do. Mr. Short.

Own methods.

Mr. Hardy's plan is pretty well known in the south of England, and has for its object the destruction of a presumed (but by him undemonstrated) fungus. The tubers are planted in the usual way, or what is best, in ridges, and as soon as the disease appears in the leaves, the haulm is turned down and so retained. Mr. Hardy believed that by so placing the stems you would favour their ablation from the fungus by the rains, and that the parasite, falling on the ground, would, from lack of its wanted ground to play upon, ignominiously perish. The spores alone are washed off by the rains, not the fungus bodily. Potatoes cultivated on the Hardy principle become affected in their stem equally soon as the most neglected; but the tubers suffer, as a rule, numerically less, and, occasionally, considerably less than those uninterfered with. The average proportion of diseased to sound, which we have repeatedly observed, was one of the former to seven of the latter.

The C. of Hornsey aspirant turns the haulm right and left, and places a little soil over the roots, believing that he does, thereby, exclude the rains, and so preserve the tubers from infection; the true explanation of the preserving influence of his plan is found in the fact of the majority of the spores (when put in motion by their own or extraneous force) having in conse-

quence of the horizontal direction of the stems, a greater chance of falling on the bare soil and perishing, than of descending to and about the tubers. This method, when modified by planting the tubers in raised beds as hereafter described, gives most satisfactory results, the tubers being fine, full flavored, and diseased in the ratio of from one in fifteen to one in fifty.

The Russian Professor's principle resolves itself into the conviction of the existence of the disease-generating agent on, in, or about the seed-tubers, and the remedy thereby suggested seemed plausible enough; it was to effect its destruction by artificial heat; viz., by drying the seed tubers in ovens until they were shrunken and wrinkled to almost apparent destruction. Potatoes so treated grew in the ratio of 66 per cent.; their stems were, as a rule, weak, and became infected as soon as any other; whilst the tubers, moderately sound at the getting-up, rapidly rotted at the proportion of 60 per cent.

Mr. Short offered to the public a remedy which, at first sight, seemed to be the most feasible, and of the greatest avail, of any heretofore proposed; it was given as original, and, as far as he was concerned, probably was so; but it had been previously carried out in principle by ourselves, and stigmatized as scarcely worthy of comment. It consists in planting the tubers in ridges; the former six inches apart, the latter thirty; and as soon as the disease is unequivocally established in the haulm or tuber, in turning down the stems, and covering them with six inches thickness of soil. Now such a plan is, *in limine*, laborious, expensive, almost impracticable in some gardens, from scarcity of soil, and, practically, of scarcely any worth, even when all the skill and patience of the most liberal experimenters are thereon bestowed; for if you cover the haulm on the first appearance of the disease in the leaves, you do it at a time when the young tubers are no larger than marbles, or to be more precise, from  $\frac{1}{2}$  to  $\frac{3}{4}$  of an inch in diameter, and though they are absolutely sound, they are of no culinary usefulness; again, if you wait till the disease has advanced further down the stem, till the tubers are tolerably fine, and only just tinted, here and there, with the disease, you find the great heat and moisture evolved by the decaying stems and the fungus thereto adherent, so to favour the spread of the disease, that in one week the number of diseased would reach 1 in 10, and go on rapidly increasing till your potatoes would be diseased in the proportion of 1 to 6. Moreover when the haulm is covered with earth, all true ripening processes at once cease, and Mr. Short was premature in his remarks on the quality of the tubers grown by his method, as they always are, and must necessarily be, smaller, closer, and less flavoured when cooked, than the typically perfect tuber, but comparatively good when the generally inferior quality of the potato crop is considered.

OWN METHODS.—No. 1. When the haulm is diseased about half way down, cut it off close to the ground, rake the soil over the lower portions of the stems, and leave them in the ground one month; this plan is simple, inexpensive, and gives in most seasons a very fair result, e. g., in the best of our yields only three, in another only ten per cent. were diseased; the potatoes, in all cases, were of good size, fairly mealy when cooked, and kept remarkably well.

No. 2. Plant the seed tubers in ridges, and when the disease appears in the haulm turn it right and left, as in the Hornsey method, and place a little earth over the roots; then proceed as in the previous (own method No. 1) and you will still have better results.

No. 3. Decidedly the best method hitherto made public, but one unfortunately almost too tedious and expensive to be carried out except for experiment, or in those gardens in which no expense is of so much consequence as an abundant crop of fine sound potatoes, is the following:—Manure your land in autumn, ridge it afresh on some mild day in the winter, and at the planting season raise therewith a series of beds or ridges 30 inches distant from each other, as high as half of the intermediate soil on each side will admit of, and pointing northeast and south-west; in these let a trench be made eight inches deep, therein the seed tubers placed six inches apart, and the whole covered with soil as fine and light as procurable. (We find the best time for planting potatoes, to be treated on this plan, to be from the middle of March to the 10th or 12th of April); after the haulm is well up, rake the soil up each side of the ridge to the stems, once or twice a month, and when the disease appears, carefully watch its progress, and when the disease appears, carefully watch its progress, and as soon as the main stem is affected, strip off all the leaves and the diseased part of the main stem, carrying them carefully away, and deeply bury them, leaving the defoliated stems to desiccate, or to throw out fresh leaves for one month. On a fine dry day get up the tubers, remove all superfluous dirt therefrom, and when perfectly dry, stow them away for spring use, resting assured that all you find rotten in the spring were tainted and overlooked at the harvest; this method gave in one instance only one, and in another only two and a half per cent. diseased, in both of which cases the tubers were fine, of excellent quality, and kept perfectly sound.

From those and other similar investigations, we may make the following general observations:—

No. 1. The fungus, as a rule, first attacks the stems (but not necessarily so), and then descends to the tubers.

No. 2. The extirpation of the disease from our island is an impossibility, except by a universal concurrence and through a series of years, of preventive measures.



No. 3. Every sort of potato will, under favourable relations, suffer; but, as a rule, the thicker the skin the less prone is the tuber to offer a timely nidus to the spores.

No. 4. Potatoes grown on virgin soil, whether left to their fate or not, will be, numerically, less diseased than those grown on beds that have been, previously, continuously cropped.

No. 5. Land that has lain turf, waste, or copse, for, at the fewest, 30 years, will not grow potatoes proof against the disease—one of the worst crops we ever saw grow on soil that had lain undisturbed turf for 30 years.

No. 6. Diseased stems and tubers should be carried out of the garden, and either buried or burnt.

No. 7. No compost or stytic dressing, *e. g.*, lime, tan, vitriol, or artificial manures, employed in a proportion compatible with luxuriance of growth, will impart to the soil the property of preserving the tubers from infection.

No. 8. Warm, humid weather, with gentle breeze blowing from a variable point, is favourable to the invasion and rapid progress of the disease; whilst cold, dry weather immediately gives an obvious, but usually temporary check, to its advance.

No. 9. Manure used at the time of planting will exert no influence in determining the invasion of the disease in either stem or tuber, but appears slightly to increase its activity after it has declared itself in the tubers.

No. 10. Soils which are well exposed, light, dry, and rich in character, are those that predispose least to the spread of the disease in the tubers; whilst wet soils, especially if shaded, render them much more amenable to its influence.

No. 11. In the present state of science no one can venture to aim at, or propose, an infallible remedy; the best we dare aspire to is to bring the disease by feasible and inexpensive measures within such limits as to be practically of no universal consequence; and with a view of stimulating others to join in the furtherance of so beneficial an object, we sincerely offer these data as bases or aids to their enquiries, hoping, ere long, to substantiate, by conjoint investigations, this desideratum of the Palace and the Many.

E. HOLLAND, M.B., &c., &c.

Stoughton, Sussex, Feb. 11, 1862.

## The Analogy between Plants and Animals

The analogy between plants and animals, familiar as it is, has not yet been appreciated in all its consequences. Every one knows that many of the vital functions are represented by corresponding processes in vegetable physiology; that nutrition, absorption, secretion, respiration, and reproduction, are essential parts, in no metaphorical sense, of the life of flowers and trees.

In some of their habits and properties, especially those connected with the circulation of their sap and the adaptation of their external coating to the exigencies of climate, these simple organisms, which we sometimes rudely term inanimate, display, if we may so say, a discrimination and a self-protecting instinct which have excited the marvel of naturalists. The conditions of health are not, indeed, the same, but similar, in the case of a tree and in the case of an animal; and the violation of these conditions is equally fatal in its effects. Hardier in many respects, in some other trees are far more delicate than animals, and, if their diseases could be ascertained and catalogued, they would probably look almost as numerous and formidable as those which fill medical text-books. Considering the immense value of timber, as well as the keenness of our national taste for ornamental woods, it is certainly strange that the pathology of trees should have been comparatively neglected in this country. The most recondite experiments have been carried on by scientific men to find out the exact proportions in which earth, air, and water contribute to their sustenance, and the ingenuity of landscape gardeners has been exhausted in devising methods for their safe transplantation. But all this time trees have been pining and dying in the prime of life, and strewing the forests with their almost worthless carcasses, and yet no one seems to have bethought himself of ministering to their infirmities, and curing their maladies by timely remedies. Hitherto pruning and lopping have been almost the only operations known to foresters and gardeners; and if the site of a plantation has been selected with due regard to soil and shelter, and its surplus wood periodically thinned out, no other precautions against premature decay have been deemed necessary or practicable.

Our neighbours, the French, though they may be less alive to the beauties of scenery than ourselves, have always shown much skill in economizing the bounty of Nature. Roadside avenues are commoner in France than in England, and the utility of trees is thoroughly appreciated by the peasantry. We are not surprised, that the first step in the medical, or rather the surgical treatment of trees should be taken by a Frenchman. M. Robert, the gentleman to whom we refer, began his labours some twenty years ago, and since that time has undertaken the cure of vast numbers of trees, especially elms, in many parts of France and Belgium. He has taken out a patent for his system, and, if we may judge by the testimonials and honours which he has received from scientific societies and public bodies, his success must have been remarkable. His theory is, that the most inveterate enemies of trees, and especially young trees, are not excessive moisture or unfavorable peculiarities of ground affecting their roots, but certain tribes of xylophagous insects. Of these the chief and most truculent are the scolytes

and the cossus; and the art of curing the ligneous consumption, which has hitherto been considered mortal, consists, according to him, in destroying these insatiable parasites, and fortifying the trunk against their future ravages. His first experiments were made on the large trees bordering the public walks of Paris, and with these he proceeded cautiously and gradually. He scored them in longitudinal sections, hoping in this way to quicken the circulation of sap in the bark between the incisions, at the same time that he laid bare and extirpated the tunnel-shaped nests of numberless tree-consuming insects. Encouraged by the results of this attempt, he ventured to try the effect of stripping trees thus affected of their whole bark—an operation not much less bold in its own way than that of flaying a human being. However, we are told that it succeeded to admiration, that “the scolytes and cossuses found themselves instantaneously annihilated,” and the grubs still in a state of unconsciousness, were buried alive in the process of cicatrization. The trees threw out new layers of “liber,” or inner bark, and even increased in bulk, as we learn from another source, more rapidly than their un mutilated contemporaries. Ever since the discovery was made, the more slashing practice has been universally adopted, and we are told that thousands of elms, already with one foot in the grave, are now convalescent patients or restored to perfect health by the benevolent exertions of M. Robert.

No English trees, so far as we are aware, have yet come under M. Robert's scalpel, and we should be the last to recommend a hasty application of so trenchant a system to the noble clumps and single trees of our public and private parks. But it is certainly worth a trial; for, if there is any truth in the theory, it goes to prove that the hostile scolytes and cossuses are not only responsible for the damage done by themselves, but serve as sappers and miners of other invading insects, besides opening cracks and channels in which the wet lodges and eats into the wood which they generally spare. It is not impossible that further researches will disclose some means of prevention which would be preferable to M. Robert's cure. Meanwhile, however, we have every motive for endeavouring to save the scanty remnant of those woods which once covered Great Britain. As far back as the beginning of this century the neglected state of the Royal forests, and the wastefulness of permitting great oaks to fall, without taking any account of their value or supplying their places with young saplings, were pointed out by Nelson. Since that time we fear that the growth of new plantations has not kept pace with the cutting down of old ones, and that we are becoming more and more dependent on foreign countries for our timber. On free trade principles we have no right to object to this, but so long as it continues to be our interest to grow timber at all, it is surely a dictate of prudence to make it as remunerative as possible by preserving it from

needless decay. Especially in the metropolis, where vegetable shade is so scarce and so grateful, the loss of a piece of foliage is a serious misfortune. How injurious the London atmosphere is to trees has long been known, and it has been remarked as a significant fact that the one which flourishes best in this smoky medium is the plane, which changes its outer bark annually. The elms have no such resource, and whether insects or impeded exhalation be the cause, these characteristic ornaments of our parks have a sickly look. It has been predicted by a prophet of dendrology that elms will be extinct in England before another century has elapsed. The bare idea of such a calamity should rouse the Woods and Forests—for the functions of that department have not expired with its name—from their lethargy on this subject. A generation must pass away before the place of a full-grown tree can be supplied, and the stately verdure of our parks testifies to a forethought which is still rarer now than in the days of our grandfathers. Men too often plant for themselves, and for themselves only, filling up with horse-chestnuts, and other trees of rapid growth, but short-lived beauty, the gaps in ancestral avenues of oak and elm. We lament this selfish short-sightedness when we see its effects on the country seats of individuals; but we have a right to exclaim against it when it affects the interest and pleasure of the nation. We cannot, indeed, blame Mr. Cowper and his predecessors for not having been the first to hail M. Robert's new invention. Now, however, that it has been sanctioned by experience, we are warranted in hoping that no time will be lost in employing some new Evelyn to report upon its application to the forest trees which Englishmen, from the earliest times, have learned to love and almost to reverence.—*Times*.

### Care of Cows before Calving.

The following extract from a Prize Essay on the “Rearing of Calves,” by Thomas Bowick, published in the Journal of the Royal Agricultural Society, (Eng.), is applicable to all latitudes:

“The health and condition of the cow before calving, greatly influence subsequent results. A late milked, lean, raking, ill-cared for beast has oftentimes an easier parturition than those that are better furnished in these respects.—But her after milking has a tale to tell of neglect somewhere; and the scraggy, “set” condition of the calf throughout its after course, often arises more from this cause than from any other. Hence, we would say, dry the cow a *fair time* before calving, and see that she has something better than barley straw to live on, else the calf and its owner will assuredly lose by it. But what is regarded as a fair amount of time for being dry? If a cow brings her first calf when from two



to three years old,—which the majority do, though all will admit that it is too early—we should not care to milk her more than five or six months after calving. By this means she will grow and increase in size and value her second calf. But a cow from the fourth to the eighth year, if in good condition, need not be dry more than six weeks or two months before calving; *i. e.* if fed with a thoroughly liberal hand throughout the year. If more sparingly fed, or if the cow exceeds the latter age, then we should prefer her being dry three months before calving. But, of course, there are exceptions to be met with, which cannot come under any general rule, such as the case of animals whose flow of milk is so strong as to continue almost up to the time when a new lacteal secretion commences."

### How to Feed out Roots.

As root culture is greatly upon the increase in this country, and many are trying their first experiments with them this winter, we will drop a few hints upon their economical use. Nothing is more common than for beginners in the business to confine an animal entirely to the use of roots. They go upon the principle that you cannot have too much a good thing, and give one to three bushels of turnips in a day. The change in diet probably sets the animal to scouring, and turnips are voted a humbug, when the humbug lies altogether in ignorance of the feeder. All animals like a variety of food in their diet, and hay or straw should always form a part of their daily fodder, no matter what else may be added.—This course should be followed, whether we are seeking to make milk or beef, or merely to keep an animal in a thriving condition.—In fattening a bullock, a bushel or so may be given according to size, making out the rest of the feed in hay, with some kind of grain or meal. In feeding milch cows, the same quantity may be given, mixing the sliced roots with the cut hay, at three meals daily. The meal will add more to the quality than to the quantity of the milk. Stock cattle with plenty of hay and roots will not need meal to keep them thriving. A good root cutter is indispensable in feeding out roots.

Then, as to the order in which the various roots should be used up, we always begin with the white, or soft turnips. These grow quickly and remain in their best condition but a few weeks. By the first of January they begin to sprout, and lose something of their value. The ruta bagas and white French turnips keep well through the winter, and may be used at any time; carrots and sugar beets may be used as soon as they are dug. The mangel wurzel needs to undergo a curing

process, and should not be used before February. They are excellent keepers, and will hold on until June. If fed out the first part of the season, they make the bowels loose, and lead to a false estimate of their value.—Analysis shows that the mangel has nearly twice the nutritive matter contained in the Swedish turnip, and experiments in feeding confirm the results of the laboratory. They will yield from fifty to one hundred per cent. more in quantity, under ordinary circumstances, and are much the more profitable root to raise. We find our root crops enlarging from year to year, and that, perhaps, is the best testimony we can give of their value. Our list this year embraces several varieties of the white turnips, rock turnips, and ruta bagas, yellow and white carrots, sugar beets and mangel wurzel.—*American Agriculturist.*

### The Royal Farms.

THE SHAW AND HOME FARMS, WINDSOR.

[The following description of the late lamented Prince Consort's farms at Windsor, from a recent number of the *Agricultural Gazette*, will be read with interest on this side the Atlantic, and will probably afford some useful suggestions of a practical nature to some of our readers. Establishments of a similar description are now getting common on the Home farms of a number of the wealthy land owners of the United Kingdom.—EDS.]

As you walk down the "Long Drive" from the Castle you pass the grounds of Frogmore upon your left, and beyond them on the same side lies the compact homestead and residence known as the Shaw Farm. It has always been a home farm for the supply of the Castle. The late Prince Consort became its tenant in 1849; but up till 1853 it was more directly under the management of the late General Wemyss.—Since then it had been placed in the hands of the late Mr. Wilson, as steward for the Prince Consort; and his successor, Mr. Tait, the present manager, has accordingly been here but a comparatively short time. The manager has altered but little since 1853, when Mr. Wilson, under the Prince's instructions, commenced the formation of the short-horn herd. The principal feature of the farm even still is the admirable equipment of the land with buildings—the exceedingly complete and well arranged farmery at the Shaw, and the perfect arrangement of sheddings, houses, and yards for stock nearer Frogmore, where also the royal dairy has been erected. The herd is, however, growing in numbers and in merit, and though the late Prince Consort had hitherto been an exhibitor of short-horned breeding stock, two or three

had been selected last autumn for a first illustration of his achievements as a short-horned breeder at the great show of 1862.

Though not landlord, as at Barton, the other relations in which he stood gave scope for the illustration of his character as an employer and a neighbour. And one of the most interesting of these illustrations was to be seen in the interest which he took in the welfare of the young men whom he employed. One part of the building at the Shaw farm is an eight-roomed house, where a number of them lodged. It is furnished with a room where they took their meals, and another used as a reading room and for an evening class. The attendance at this winter's evening school was registered, and "copies" and other marks of progress in education were periodically inspected by the Prince, who awarded prizes for attendance and improvement.

The Shaw farm includes 800 acres of land in the Park and elsewhere, 120 acres being arable. It is worked by six pairs of horses—a large number for the land, and more than would be needed were it not for the considerable extra labour connected with roads and estate management. About thirty men are employed, besides other hands, at haymaking and harvest times. The farm stud is wholly Clydesdale, and the Prince had been frequently successful as an exhibitor of them at English Agricultural Society's shows. His last act as the tenant of the Shaw farm about three weeks before his death, was to direct Mr. Tait to nail up over the stalls the premium cards which had been placed over two of his horses at Leeds, and which had lain till then in the farm-house unattached. In anecdotes of this kind, in the frequent walks taken by the Queen and himself round the two farmeries, in his personal inspection of the monthly report presented through Sir C. Phipps, in the instructions given with reference to competition at the national exhibitions, and in his frequent inquiries and conversation about the evening school, the Prince chiefly showed his interest in these arms.

The small quantity of arable land attached to the Shaw farm is managed on the five-field system, two corn crops being taken in succession. There is no lack of manure; the Park supplies immense quantities of fern, which is used as litter in the yards; and great store of yard dung is obtained thus, and from the consumption of hay by the large dairy herd, and that of hay and roots by the young stock. The arable land is accordingly in a high state of cultivation. Forty tons of mangel wurzel per acre are a common crop, and as much as sixty has been obtained. Those lying in store and now in daily use are certainly a remarkably fine sample. The corn is carried home and built in round stacks in a yard near the fixed steam engine. The roots are stored close by.

The buildings are remarkably complete and well arranged. They stand upon a square of

ground, the sides running north and south, east and west, respectively. They consist in the first place of two rows of buildings along the two sides of this square, running north and south. The row upon the eastern side includes cart-shed at either end, two-storied lodging-house and school in the middle, and boxes and farm-horse stables.

The row on the western side includes carpenters' yard and shed, thrashing barn and graneries, steam engine and boiler house, floor for mixing chaff with pulped roots, and piggeries around three sides of a small square, in the midst of which is the food house for their supply. Between these two north and south lines, on the east and on the west sides of the square, there are three rows of buildings, &c., with roadways, between them, and also between their extremities and the two lines already described.

The first row on the northern side includes foreman's house, stable, poultry house, and blacksmiths and carpenters' shops. The second row includes a series of boxes, hamels, (small yards) facing south, and double stalls, with a large root house for the supply of the whole, where Gardner's and Moody's turnip cutters are fixed and worked by strap from a shaft to which the motion is given by a small oscillating one-horse steam-engine standing on the floor, steam being brought for it along a pipe from the thrashing engine boiler house just across the road. The third row occupies nearly half the width of the square, and its whole length between the two lines of buildings at its east and west ends. It is divided midway by a wide shed in which shed-feeding of sheep on sparred floors is adopted, and on either side with sheds at their further ends are two capital yards for young stock. The sheep sheds are now full; they are said to answer well. One hundred and fifty Cheviot wethers are now fattening there. The floor is divided into pens about 9 feet square, holding about six sheep a piece; they receive cut roots and cake, and thrive fast compared with the progress made out of doors. As much as 100 cart-loads of capital solid dung are taken out from beneath them towards spring. The only fault in the arrangement is the imperfect access given to the vaults where it accumulates, and from which it has to be lifted through trap doors in the floor. The place was perfectly sweet, and dry and clean. The buildings are well supplied with corn and cake crushers, millstones, chaff cutters and turnip cutters, all worked by steam power. The granaries are on a third floor over the thrashing barn; the corn is thrashed by Messrs. Collinge & Co's engine, and delivered by travelling cups to the granary bins above, whence it may be sacked and delivered into carts outside by overhanging crane and pulleys from the end of the department.

Wood's combined reaper and mowing machine and other first-class implements of cultivation,



&c., are lying in the sheds. The horses by which they are worked are managed on the Scottish plan; the men working during the full summer day from 6 to 11 and then coming in, and again from 12 to 5—10 hours a day. They are worked hard and well fed, receiving two bushels of corn a week, and a daily feed of beans in addition during seed time and severe work, and hay in effect *ad lib*. One foreman is employed over the men, through whom Mr. Tait gives his orders; himself receiving them when any unusual arrangement is directed through Sir C. Phipps.

A short walk takes you across this to the Home Farm and dairy beyond Frogmore. It is here that the dairy herd is chiefly kept, and that the principle piggeries, those of the white Windsor breed, are placed. The whole accommodation for live stock here is of the most perfect kind.

The principal feature in the arrangement is the magnificent double-rowed cow-house, with its wide central gangway, lofty roof, and roomy arrangement generally. The arrangements for watering and for draining these and all other parts of this farmery are most perfect. There is a complete system of pipage for the supply of water to troughs on one level throughout the building. It is impossible in a short description to enumerate the many clever points of detail by which Mr. Turnbull, the Castle architect, has in these buildings of his designing obviated a great many difficulties, with liabilities to nuisance. The whole of the soakage and drainage of the sheds and yards is conducted to a manure house, whence the liquid, collected in a tank, may be either pumped into water-carts and removed for direct application to the land, or distributed, as it more generally is, over the stall-manure, which is moved at intervals and stored for protection from the weather.

Ready access is given to all the yards and sheds for litter, chiefly fern-leaf mown from the Park and stowed away for its winter purposes, and where pig-food, hay, and roots are stored, easy access is given by gangways to all the feeding houses, stables, cribs, and boxes where the stock are kept.

One of the chief features in these buildings evidently is the ample accommodation for pigs. The comparatively smaller white Windsor breed—from 16 to 20 breeding sows—are kept here. The pure Berkshire—10 to 12 sows—are kept at the other farmery. In both cases there is ample demand for the young stock for breeding purposes. Mr. Tait gives the preference to the Windsor breed, both for fecundity and for precocity. As much as £700 worth of produce has been sold out of the piggeries at the Home Farm alone in a single year.

The dairy stock for which ample accommodation is here provided, is for the most part kept on these premises. Nearly 200 head of stock are now kept—about 80 cows in general of the short-horn breed, besides 10 to 12 Alderneys.

The short-horns, of course are not yet all pure pedigree stock—the pure-bred herd has been growing into existence only during the last eight or ten years.

But since 1855 pure Booth bulls have been used over the whole. Prince Alfred (successful at the North Lincoln Show in 1859, and hired in succession by the late Prince, the Emperor of the French, and Lady Pigott), Fitzclarence, and now Lord Hopewell, have been used over both the pedigree cows and the other stock, and the whole are thus rapidly acquiring a high-bred and common family character.

The pure pedigree herd are descended chiefly from the following cows:—Alix (1853), by Earl of Dublin, bred by Sir C. Knightly, and bought at the Fawsley sale. Rachel, (1850), bred by the Prince Consort, by Goldsmith (10,277), dam Matchless, by Fitzhardinge (8073). Narcissus (1851), bred by Mr. Trotter, of Bishop Middleham, by 3rd Duke of York (10,166), dam Norma by (7996). Coldcream (1851), another Fawsley cow, also got by Earl of Dublin (10,178). Graceful (1852), bred by Mr. Majoribanks, got by Factotum (11,455). Bracelet (1856), bred by the Prince Consort, by Prince Alfred, dam Cowslip, by Bellville; &c; and Sally (1853), bred by the Prince, by Lord Poppington (10,437), also out of Cowslip. Sally was the second prize heifer at the Paris show in 1855. Besides these, a few others more recently introduced and some of shorter pedigree might be included. The cows first named have all been good breeders. Alix and Coldcream have each had five calves and Sally six since 1856. Graceful and Rachel have had six each, and Narcissus five since 1855. They are kept in fair breeding condition. Much of their milk goes to the dairy, and no roots, therefore are given them; they have hay, pasturage, and water. A ready sale at long prices is, of course, obtained for young bulls, and the heifers are taken into the herd and have already begun to add to its number, as by Annette, daughter of Alix; Rosewood and Raby, daughters of Rachel, &c.

The Prince had not been an exhibitor of short-horn stock in this country. He was, however, a successful exhibitor at the International Show at Paris, as already named, and had proposed exhibiting at the International Show this year at Battersea, to which end Prince Arthur, a yearling bull by Fitzclarence (14,552) out of Annette, a daughter of Alix, by Prince Alfred, and two yearling heifers out of Coldcream and Narcissus are being got ready—whether the plan will now be carried out is uncertain. The late Prince was, however, as is well known, a constant exhibitor of other stock at English shows, and a large case full of medals won by him lies on the table in the Queen's apartment at the farm-house. No fewer than 27 silver and 5 gold medals and 6 cups have thus been collected.

Near the Home Farm stands the royal dairy

—a most beautiful sight to see. An apartment some 36 feet by 20 feet in height—the roof supported by pillars—provides marble shelving all around it and marble tables in the midst, on which the white milk dishes stand. The floor, wall, ceiling are all of porcelain—either Minton's tiles as on the floor and roof (the latter presenting an openwork for ventilation), or white porcelain as on walls, or embossed and coloured porcelain as in cornicing and other ornamental parts. The whole is as perfect a combination of form, colour, and lustre as was ever provided for the purpose which it serves, and which is observed in the design throughout. The utensils are of the best common kind—common barrel churn, &c.

Hard by is the aviary and poultry house—a subdivided range of shed and wirework caged-in-yards, in which the various breeds of poultry and kinds of farm-yard fowl are kept.

You regain the Shaw Farm and the residence of Mr. Tait by a walk through the now deserted grounds of Frogmore House, beautiful in the magnificence of its timber trees, the smoothness of its grassy glades and slopes, and the mixture of its groves and mounds and ornamental water; interesting, too, for the mausoleum newly erected in their midst, where lies the body of H. R. H. the late Duchess of Kent; soon, however, to be more sadly interesting still for another resting-place soon to be provided, where the remains of the late Prince Consort will lie in the midst of scenes of quiet beauty, and close by the scenes just visited of intelligent activity, both of which he loved so well.

### Alsike Clover.

*Trifolium hybridum* or Alsike Clover, is a species which appears to a certain extent, to combine the properties of the red and white clovers. It was considered by Linnaeus to be a hybrid, and is cultivated to a considerable extent in the district of Alsike, in Sweden, from whence it derives its name; and was, we believe, first introduced into this country about 1834 or 1835.

It has for the last few years engaged the attention of agriculturists in Scotland and various parts of England to a considerable extent; and its reputation is now so firmly established, that we think it is likely to become much more extensively sown this season than ever it has been before. Its chief advantage consists in its succeeding on land which, from repeated sowings of red and white cloversseed, has become cloversick.

The treatment required for it appears to be very much the same as for other clovers. Our practice and that of our neighbours, on clay land, has been to drill about eight or nine pounds of seed an acre, on barley or wheat, about the first week in April, care being taken that the seed is not deposited too deep in the soil. After harvest, if it has been a growing season, we let our sheep occasionally run over

it, for a month or two, if the weather is fine, our opinion being that the treading of the sheep consolidates the land, and is of great advantage to the Alsike, giving it firm root-hold. About the middle of October, it should be dressed with about six or eight loads of farm-yard dung, as short as can fairly be got. In the spring, it will require the usual bush-harrowing; and when it has made a fair growth, the sheep may again be put on to it, and allowed to remain until the first week in May, if intended for seed: if not, it can be depastured, as other clovers.

We are decidedly of opinion that it should not be fed later than the first week in May, if for seed. Still, we have seen it fed until June; but the advantage appears doubtful, as it shows the harvesting of the seed too late on in the season, and if dry weather sets in there is some difficulty in getting it to make a good start. Last harvest a considerable quantity was left for seed, and the yield is said to be good, the quantity fine, and the price more moderate than it has ever been before. It generally plants well; but last season was an exception, a large breadth of the land sown having missed plant altogether. It has been ploughed up for beans, mainly owing, we consider, to the inferiority of last year's seed. In ordinary seasons, even when thin in the spring, it tillers very much and fills up in a remarkable manner.

When required for mowing, it is left in the same way as red clover, and on land in good fair condition will cut two tons of hay an acre. The feeding qualities of the hay are said to be considerable, but we have seen no analysis of its value compared with ordinary clover hay.

Some difference of opinion is entertained as to the comparative merits of this variety and red clover for the depasturing of sheep; it being affirmed by many growers that sheep will leave any other kind of grass or clover to feed on the Alsike, whilst others consider that its principal merit consists in its succeeding so well on cloversick soils, its perennial habit and fibrous root being so dissimilar to the red or white clover. Where it has been grown, it has invariably been found an excellent preparation for wheat; and we have no doubt it will shortly become sown quite as extensively as either red or white clover, and prove a most valuable acquisition to our artificial grasses. The more it becomes known, the greater will be its cultivation; the high price that the seed has previously borne, and its scarcity, have hitherto prevented its more extended use.—*Mark Lane Express.*

*How to choose a good potato.*—A correspondent of a Scottish paper gives the following rule:—"The finest, mealiest, and most nutritious potatoes are always denser and heavier than the soft and waxy. By taking advantage of this difference in their special gravity, the light and inferior potatoes are made to swim on the surface of a solution of salt, while the heavy and good sink to the bottom."



## Agricultural Intelligence.

### Spring Shows.

We are informed of the following Shows to take place this Spring. We request secretaries of Agricultural Societies to inform us of the date of their exhibitions at as early a date as possible, so as to admit of publication in time to be of use to those interested:—

Fullarton, Logan, and Hibbert Agricultural Society, at Mitchell, April 2.

West Riding of York Agricultural Society, at Weston, April 23.

### Patents of Invention.

BUREAU OF AGRICULTURE AND STATISTICS, }  
Quebec, 20th Feb., 1862. }

His Excellency the Governor General has been pleased to grant Letters Patent of invention for a period of fourteen years from the dates thereof, to the following persons, viz:—

James W. McLaren, of Lowville, in the County of Halton, "An improved feed gear for Straw Cutters."—Dated 26th November, 1861.

Lewis Comer, of the township of Hinchinbrook, in the County of Frontenac, Mechanic, "An improved Bee-Hive."—Dated 29th Nov., 1861.

Thomas Blanton, of Drummondville, in the County of Welland, Carpenter and Joiner, "An improved Broad-Cast Seed Sower and Drag."—Dated 29th November, 1861.

Edwin R. Langs, of the township of Brantford, in the County of Brant, Farmer, "A portable and substantial Fence-post and Fence."—Date 29th November, 1861.

Philip Cady Van Brocklin, of the town of Brantford, in the County of Brant, Iron Founder, "An improved combined Grain Drill, Cultivator, and Horse Hoe."—Dated 29th November, 1861.

Masa Branch Southwick, of Mont St. Hilaire, in the County of Rouville, Manufacturer of Wool and Flax dresser, "A new and useful machine for separating shives, chaff and dust from the Tow of Flax, Hemp, &c., to the be called "Southwick's Tow Cleaner."—Dated 5th Dec., 1861.

Matthew Henry, of the township of Compton, in the County of Compton, Cabinet-maker, "A New Plow, to be called Henry's complete Plow."—Dated 9th December, 1861.

Matthew Henry, of the township of Compton, in the County of Compton, Cabinet-maker, "An improved Fanning Mill."—Dated 9th December, 1861.

James Howell, of the township of Dereham, in the County of Oxford, Moulder, "An Iron Die for moulding and casting Plow Shares."—Dated 16th December, 1861.

William Mahaffy, of the town of Brampton, in the County of Peel, Blacksmith, "An improved Plow."—Dated 16th December, 1861.

## Horticultural.

### Fruit Growers' Association.

We again insert the following questions, and trust that those who have opportunities for observation, will give them their attention.

#### THE FRUIT GROWERS' ASSOCIATION OF UPPER CANADA

Desirous to collect and circulate information relative to the production of the several kinds of fruits in the various parts of the Province, respectfully requests the several Horticultural societies, County and Electoral Division Agricultural societies, Township Agricultural societies, and all gentlemen interested in the subject of fruit culture to cause answers to the following questions to be prepared, and sent to the Secretary, Mr. D. W. Beadle, at St. Catharines, C.W., on or before July 1st, 1862

As the questions are all numbered, the answers may be numbered to correspond, and thus avoid writing down the question intended to be answered.

### QUESTIONS.

#### APPLES.

1. What varieties would you recommend as most suitable to be planted in your locality?
2. What varieties are most profitable for market?
3. What varieties are the most hardy?
4. What varieties have been tried in your neighborhood and found too tender?
5. Are apple trees subject to any disease, or the attacks of any insects in your section, and if so what?

#### SEASON FOR TRASPLANTING.

6. What season has been found most favourable for transplanting, spring or fall?

#### DWARF TREES.

7. Have dwarf apple, pear, or cherry trees, or either of them, been planted in your vicinity, and with what success?

#### PEAR.

8. What varieties of pear would you plant in your section?
9. What varieties are most profitable in your locality for growing fruit for market?
10. Have any varieties been planted and found too tender for your climate, and if so what are they?
11. What varieties do you find to be the most hardy?
12. Are pear trees subject to any disease with you, or to the attack of any insect, and if so what?

#### PLUMS.

13. What varieties of plums succeed best in your section?

14. Have any varieties been tried which proved too tender for your climate, and if so, what?

15. Which varieties would prove most profitable for growing fruit for market?

16. Is the fruit stung by any insect in your locality, thereby causing the fruit to fall prematurely, and if so what insect?

17. Is the tree liable to any disease, or to the attacks of any insects, and if so what?

#### CHERRIES.

18. What varieties of cherries succeed best in your neighbourhood?

19. Have any varieties proved too tender to endure your climate, and if so which are they?

20. What varieties can be profitably planted for marketing the fruit?

21. Are the trees subject to any disease, or to the attacks of any insects, and if so, what?

#### PEACHES.

22. Can the peach tree be grown in your section, and if so, what varieties succeed the best?

#### APRICOTS AND NECTARINES.

23. Can the apricot or nectarine be grown in your section, and if so what varieties succeed the best?

#### QUINCE.

24. Can the quince be grown successfully in your section?

#### STRAWBERRIES.

25. What varieties of strawberry have been found to succeed well in your neighbourhood.

26. What varieties would you plant for market?

#### RASPBERRIES.

27. What varieties of raspberries have been found to succeed best in your locality?

28. What varieties do you recommend to plant in your neighborhood, for growing fruit for market?

#### GOOSEBERRIES.

29. What varieties of gooseberries succeed best in your section?

30. Is the fruit ever covered with mildew?

31. Do you know any varieties that are exempt from mildew in your section?

32. Do you know any means of preventing the mildew, and if so, what?

#### BLACKBERRIES.

33. Has the new Rochelle blackberry been tried in your vicinity, and with what success?

#### CURRENTS.

34. What varieties of red, white, and black currants are most esteemed in your locality?

#### GRAPES.

35. What varieties of grape have been planted in your section?

36. Have any of them proved altogether too tender for your climate, and if so, which?

37. Have any of them proved perfectly hardy and if so, which?

38. Do any of them invariably ripen their fruit well every season, and if so which?

39. Are there any vineyards planted in your neighborhood, and if so with what varieties?

40. Any other information, pertinent to the subject, such as the character of the soil that predominates in orchards of your section; the soil found to be most suitable to the kinds of fruits, &c.

41. Do you know of any seedling fruit of merit in your vicinity? If so please give its history and description; kind, size, color, quality, time of ripening, growth of tree, &c., &c.

Editors of papers throughout the Province are requested to give the above one or two insertions, in order that there may be every opportunity afforded to make the information sought, as full as possible.

### Fruit Culture in Orchard Houses.

*Read by Mr. D. Murray, Nurseryman, Hamilton, before the Hamilton Horticultural Club, on the 6th February, 1862.*

MR. PRESIDENT AND GENTLEMEN,—In my former paper on the orchard house and pot culture, I gave a general view of the system; also, a representation of my hopes of its future; and, as I promised at that time, now make a few remarks on the culture and management, confining myself principally to my own experience.

I stated in my last paper that few trees gave more satisfaction in the orchard house than the peach, the nectarine and vine; this as their being the most valuable fruits. The apricot, the plum, the cherry, the pear, and fig, are also well adapted for pot culture. With many varieties of the smaller fruits, the system adopted is very simple, and may be accomplished by any one who will give the attention. During the summer months we select and mark amongst our maiden plants in the nursery lines the different kinds we want for fall potting. Those so marked are stopped and pinched during the season of their growth; much is gained in this way in giving the trees a good start, whether as pyramid or bush. We also make it a point to pot none but rooted trees of best quality; they are lifted early in the fall, dressed and potted in twelve inch pots; this size I find large enough for any tree for the first few years; when the plants are weak smaller pots may be used. The compost we use is the top spit of rich alluvial pasture land, say of it two-thirds, and one-third of well decomposed manure and leaf mould, all well mixed together, but not sifted, prepared three months previous to use; a good drainage of oyster shells, broken crocks, or charcoal in the bottom of the pots. The roots of the plants being then drained, they are potted; care being taken that the fine roots are all nicely spread out



and the mould well primed about them. When this is done, give a good watering, and set them aside on an outside border, where they may remain until there is appearance of frost; then remove them under cover, lay on their side, and put on a good covering of straw to protect from severe frost during winter. Examine them frequently when in their winter quarters in case of attacks of rats or mice. When spring arrives, uncover and place them in the orchard house; at first, water sparingly, but as vegetation begins to move and the plants commence growth, watering is increased. Ventilate freely when the weather is favourable. Trees are classed as pyramids, dwarfs, or bushes. During the seasons of growth particular attention is paid to the form of the trees. Care must be taken in pinching and stopping, the only means by which a well proportioned tree is got at, and well furnished with fruit spurs. The syringe must be used freely morning and evening, when the trees are not in blossom. When at this stage the trees are subject to be attacked by the aphids; this must be carefully watched, and when they make their appearance, either fumigate or syringe with tobacco water. Some of the young fruit trees will show fruit buds the first season, and even produce fruit, but this must not be permitted, as it is injurious to the future welfare of the tree.

The fruit trees are all top-dressed in fall or early spring, the latter period I prefer in this country, the trees being kept in a dry state all winter exhausts the soil. If this is properly done it is not necessary to change the pots for a number of years. We use the same compost in top-dressing as formerly recommended in potting our trees. Take the old mould out about half way down the pot, taking care not to injure the young rootlets or spongioles that are clustered round the stem. When that is done, we then fill up the space with fresh compost, raming it firmly down with a piece of stick made for the purpose; give a good watering, thoroughly wetting the whole of the ball. The old soil, taken out of the pots, if examined, will be found quite exhausted, and full of small fibrous roots, the greater portion of which will be found either dead or dying; this is a natural consequence, they having done their work.

In pot culture there is an annual provision made of rootlets emanating from the stem as formerly referred to, they get hold of the fresh compost, very soon run through it, and become the principal feeders of the tree. We occasionally use liquid manure for all our trees during the growing season, but only by the hand of an experienced person, otherwise there would be a risk, many of the liquids being very powerful. When it can be obtained, a liquid from sheep-droppings is very excellent, and may be used without danger. When the trees are in blossom air is given freely, but if so at an early period in the season, when the weather will

not permit of it, or of the bees being in to assist in the work of impregnation, we must do it by occasionally giving the stem of the tree a gentle rap with a stick when in bloom, always making choice of a clear day. We find this simple method quite sufficient for the dispersion of the pollen. Those having plenty of time at their command may do this nice piece of work with a camel's hair brush, and do it very effectually by passing the same slightly over the anthers when the pollen is full up. This is a very interesting piece of work. Care must be taken in thinning the fruit in proper time, and not to over-crop the trees. In dry weather continue to give plenty of water, be watchful of the red spider, and all other pests that affect the trees at this season. When the fruit is well advanced give plenty of air both day and night, without which the fruit will not be high in flavour.

For vines, add to the former compost a little crushed bones, giving plenty of water; and as soon as the roots begin to fill the pots give a good watering with liquid manure every third day; attend punctually to stopping the shoots and laterals; stop one joint above the fruit branch, and the laterals two from base on the shoot they spring from.

In conclusion, I beg to state I might have gone more minutely into this subject, but my main object was to convey to you my views as shortly and briefly as possible, trusting you will all encourage the orchard house and pot culture.

---

## The Poultry Ward.

---

### Something about Hens.

A correspondent of the *N. H. Journal of Agriculture* says: "It is a pleasant recreation to tend and feed a bevy of laying hens. They may be trained to follow the children, and will lay in a box. Egg shells contain lime, and in the winter when the earth is bound with frosts or covered with snow, if lime is not provided they will not lay—or if they do lay the eggs will of necessity, be without shells. Old rubbish lime from chimneys and buildings is proper, and only needs to be broken for them. They will often attempt to swallow pieces as large as a walnut. I have often heard it said buckwheat is the best food for hens; but I doubt it. They will sing over Indian corn with more animation than any other grain. The singing hen will certainly lay eggs, if she finds all things agreeable to her; but the hen is such a prude, as watchful as a weazel, and as fastidious as a hypocrite—she must, she will have secrecy and mystery about her nest—all eyes but her own must be averted—follow her, or watch her, and she will forsake her nest and stop laying. She is best pleased with a box, covered at the top, with a backside aperture for light, and side door by which she can escape unseen. A farmer may

keep one hundred hens in his barn, and allow them free liberty to trample over his hay-mow, set where they please, and lay where they please—and get fewer eggs than one who has a department especially for his fowls, and keeps but half as many, and furnishes them with corn, lime, water and gravel, and who takes care that his hens are not disturbed about their nests.

“Three chalk eggs in a nest are better than a single egg. Large eggs please them. Pullets will commence laying earlier in life when nests and eggs are plenty, and other hens are cackling around them. A dozen fowls, shut up away from the means of obtaining other food, will require something more than a quart of Indian corn a day. I think fifteen bushels a year a fair provision for them; but more or less, let them always have enough by them—and after they have become habituated to finding enough at all times, they take but a few kernels at a time, except just before retiring to roost, when they will fill their crops. But just so sure as their provision comes to them scantily to the last extremity and will stop laying. One dozen fowls, properly tended, will furnish a family with more than 2,000 eggs per year, and 100 full grown chickens. The expense of feeding the dozen fowls will not amount to eighteen bushels of Indian corn. They may be kept as well in cities as in the country, and will do as well shut up the year round as to run at large—and a grated room well lighted, ten by five feet, or larger if you can afford the space, partitioned off from the stable or other outhouse, may be used as a hen-house. In the spring, (the proper season) five or six hens will hatch at the same time, and the 50 or 60 chickens give to one hen. Two hens will take good care of one hundred chickens, until they are able to climb their little stick rosts. They should then be separated from the hens entirely. They will wander less, and do better, away from the parent fowls.—Chickens put in the garden will eat up the May bugs and other destructive insects; but for my own part I much prefer four or five good sized toads; for they are not particular about their food, but will snap up ants and bugs of any kind, and will not, if a good chance offers, refuse the honey bees, but will down them in a hurry. In case of confining fowls in summer, it should be remembered that a ground floor is highly necessary, where they can wallow in the dirt, for they like it as well as the hog likes muck.”

## Veterinary.

### The Progress of Veterinary Science.

The following is a brief report of the introductory lecture, delivered by Mr. Andrew Smith, Veterinary Surgeon to the Board of Agriculture—

at the commencement of his course of lectures on Veterinary Science the present winter:

In commencing a course of study and of systematic enquiry into the details of a profession, it is desirable and interesting to know a little of the early history of such profession. So I will, therefore, first endeavor to give a short outline of the progress of the Veterinary Art. During the last century, the study of the diseases of the lower animals may be said to have begun in a somewhat scientific manner, although we find, previous to that time, even before the Christian era, that celebrated and eminent men practised both human and veterinary medicine. Hippocrates, the most eminent physician of early times, wrote an elaborate work on the horse, and practised the healing art indiscriminately on both man and beast. During the 17th century, numerous treatises on the lower animals and their diseases were brought before the public; a number of them were but of little value, but all tended to direct attention to the diseases of these animals.

In 1761, the first public school for the teaching of the Veterinary art was established at Lyons, under the patronage of the French Government, which institution had for principal, the celebrated Bourgelat, well known to the Medical profession by his writings on Anatomy and Medicine. A regular course of Veterinary Medicine was there taught, under which students acquired an acquaintance with the various forms of disease, and the action of Medicines on domestic animals. A few years later was established the present school at Alfort, near Paris, which is still supported by the Government, and of course is in a most flourishing condition. Subsequently, schools were established in Prussia, Germany, Austria, London, &c.

About the year 1780, St. Bel, a Frenchman, came to London, and made proposals to give lectures on Veterinary Medicine; however, his propositions did not meet with success and he returned to France. Two years afterwards, St. Bel made a second attempt to found a school in London, and this time he was taken notice of by the Agricultural Society of Odeham, and an institution was founded, called the Veterinary College of London, of which St. Bel was principal and Mr. Blain assistant. However St. Bel was not spared to see the fruit of his labors brought to maturity, being suddenly cut off in the midst of his usefulness. After St. Bel's death, it was necessary to appoint a person to fill the vacant chair. Mr. Clarke, of Edinburgh, the King's Farrier for Scotland, was asked to come forward as a candidate, but declined. Mr. Morecroft, an eminent practitioner of London, who had written a treatise on Lameness in the Horse, and who also had studied the Medical Profession, and afterwards learnt the Veterinary Science in France, was next brought forward, and also Mr. Coleman, who had somewhat distinguished himself by some experiments on the



orse. These two gentlemen were elected as joint Professors. A regular course of lectures was delivered, and dissections of the horse carried on. A committee was appointed, consisting of the most distinguished Medical practitioners in London, to examine the pupils, and such pupils as this committee considered to have acquired a sufficient knowledge of the Art were granted Certificates.

The students attending those lectures were granted the privilege of attending the lectures (*gratis*) of the Medical committee, a number of the members composing it being teachers of Medicine. And among the first to whom the Veterinary profession are indebted, was that indefatigable promoter of human medicine—John Hunter. The British Government now voted a sum of money annually for its support, and the rank of Commissioned Officers was granted to such as were appointed to the Army. The East India Company, seeing the beneficial results produced by such appointments, also appointed Veterinary Surgeons to serve with their army in India. After Mr. Coleman's death, Mr. Sewell, formerly assistant professor, was appointed Head Professor. He again was succeeded by Mr. Spooner, who is at present Principal of the Royal Veterinary College, London.

Mr. Simonds has instituted lectures on the Anatomy, Physiology, and Diseases of the Ox, Sheep, and Dog, and Mr. Morton on Chemistry, and Materia Medica. Mr. Morton has now retired, and is succeeded by Mr. R. E. Tuson.

The average attendance of students at the London College is about 100; and a student must attend all the different courses taught at that institution for at least two years before presenting himself for Examination to be granted a Diploma. The Board of Examiners consists of Medical Professors and Practitioners, also a certain number of Veterinary Surgeons, who are affiliated as members of the Board. Of course, numbers of these students do not intend to practice professionally, but are gentlemen and farmers, &c., who, perhaps, attend for one session, and get some insight into the Anatomy and Physiology of the horse, and the nature of the more common diseases affecting Horses and Cattle, and which is of the utmost benefit to them as owners of Stock.

More than forty years ago, Professor Dick, of Edinburgh, commenced to give instruction in Veterinary Medicine, and was recognized by the Highland Agricultural Society of Scotland, and he succeeded in establishing the Edinburgh Veterinary College.

The subject of Veterinary Surgery was first brought permanently under the consideration of the Highland Society of Scotland, at its general meeting in June, 1823, when a committee was appointed and arrangements made with Professor Dick, to deliver a course of lectures. But previous to this, he had given publicly a series of lectures, for several years.

The lectures under the auspices of the Society

were continued in 1824, '25, '26, '27 and '28—during which time the attendance of pupils was limited. The number of students educated at the Edinburgh College, who obtained the Highland Society's Diploma from 1838 to 1844 were 263; the number who obtained the Diploma of the Examining Board, which was appointed by the Royal College of Veterinary Surgeons, and sat at Edinburgh from 1845 to 1848, was 59; and the number who have received the Diploma of the Highland Society, after resuming its examinations from 1848 to 1861, was 333; and in all 655.

The average annual attendance for the two or three past years,—professional, amateur and others, has been over one hundred.

The Board of Examiners consists of Professors in the Edinburgh and Glasgow Universities, Medical practitioners of distinction, and eminent veterinary surgeons from different parts of Britain.

The course of study of the London and Edinburgh Colleges is the same, and consists of the Anatomy and Physiology of the horse, and other domestic animals, and their diseases; Chemistry, Veterinary Materia Medica, and clinical instruction.

The branches taught by the different teachers are, at the London College:—Anatomy, Physiology, and Pathology of the Horse, Prof. Spooner.

Anatomy, Physiology, and Pathology of other domesticated animals, Prof. Simonds.

Descriptive Anatomy, Assistant Prof. Varnell.

Chemistry and Materia Medica, R. E. Tuson.

Anatomical demonstrations, M. W. Pritchard.

Subscribers of Two Guineas per annum, or of Twenty Guineas for life, are entitled to have horses examined as to soundness upon purchase free of any charge; also to have horses treated by the Professors in the infirmary of the College by paying only for their keep, at the rate of one guinea per week, for each horse.

At Edinburgh the classes are as follows:—

Veterinary Medicine and Surgery by Prof. Dick.

Veterinary descriptive Anatomy and Physiology, Mr. Strangway, V. S.

Practical Anatomy, Strangway, V. S.

Chemistry, Veterinary Materia Medica and Pharmacy, Dr. Dalzell.

Physiology, Dr. Young.

Practical Pharmacy and Clinical instruction, Prof. Dick, assisted by Mr. Worthington, V. S.

About four years ago another Veterinary College was commenced in Edinburgh, conducted by Mr. Gamgee, a graduate of the London College, and afterwards an assistant to Professor Dick. The number of students attending the new Veterinary College last season was between 30 and 40, and the course of study is similar to that of the Edinburgh and London Colleges.

Veterinary Students in Britain are rapidly increasing and so is the demand for the services of the Veterinary surgeon. The prospects of the

profession improve with the progress of agricultural pursuits; districts are opening up for the Veterinary practitioner, in which at one time every sick animal was believed to be bewitched, and the tricks of the sorcerer were trusted by credulous and timid people.

Agricultural Literature is improving so much, and farming in the remotest districts is being carried on with such intelligence and enterprise, that there is now profitable employment for Veterinarians, where, certainly, a few years back they could only have expected to starve.

Veterinary science is more appreciated on the Continent of Europe than anywhere else. In France, there are upwards of 3,000 Veterinarians, and the Emperor grants £20,000 to support the French Veterinary Colleges.

Veterinary Science is to the lower animals what Human Medicine is to man; and it must, therefore, be highly beneficial to the lower orders of creation; and it can only be properly attained by a regular course of study. Facts in Medicine can only be discovered by patience and industry. The duly qualified Veterinary practitioner enters upon the duties of his profession with an understanding of Anatomy, Physiology, Nature of Diseases, Chemistry, &c., the same as the Medical practitioner. The Medical man often experiences a difficulty in coming to a correct diagnosis of disease, although he finds a useful guide in conference with his patient. How much more difficult must it be for the Veterinary Surgeon—whose patients are dumb animals, and therefore, he can only judge of the state of their health by physical examination? Hence the greater need of a proper system of training. Even supposing a correct diagnosis cannot be come to, such rational treatment can be adopted by which, upon a second examination, symptoms may be developed by which the precise nature of the disease is detected; and not in that hap hazard method which is practised by many, who attempt to prescribe for the sick and dying, without the least idea of the disease, and the nature of the drug which they are giving, supposing, perhaps, they have inherited medical skill from their ancestors.

The Veterinary practitioners are in a much better position for prosecuting their studies along with the practice of their profession than were the practitioners in the Medical Department, as from their class of patients, they have ample opportunity of prosecuting Physiological and Anatomical studies, and when cases prove fatal, of making post mortem examinations. But to make a post mortem examination, it is necessary to be conversant with the state of the different organs of the animal body when in health. To treat any organ when in a diseased state, it is also essential to know the structure and functions of that organ, or organs, and therefore, in the first place, before undertaking the treatment of diseases of the lower animals, we must study their Anatomy and Physiology.

The Veterinary Surgeon is now convinced that no such sure way lies open to him as the broad and accessible one through the dissecting room. In the Medical profession, the most eminent trace their success to their Anatomical acquirements, and it is owing to this that science so triumphantly exercises the sway over the Medical world at large. By learning Anatomy, we become acquainted with the situation, form, connexion, use, and structure of every part of the body.

Percivall says:—"A Professor of Medicine with a mind unfurnished with a knowledge of Anatomy and Physiology, is precisely in the situation of a mechanic who undertakes to repair a deranged or broken machine without any acquaintance with its mechanism or operations. Both such persons are impostors in their profession, either of them perchance may do good, but there is ever much to be apprehended that they may be working some irreparable mischief. We hear of wonderful cures being performed by persons having no pretensions whatever to medical science, and in this hit or miss manner, it cannot be denied that some very valuable discoveries have been made. Could we, however, but set against these discoveries, excellent as some of them may have turned out to be, a true catalogue of the failures attendant upon the experiments in which they had their origin, we are sorely afraid that the picture would exhibit a complexion, which even the discoverers themselves could not regard without mingled dissatisfaction and remorse.

The Veterinary profession, I am glad to think has progressed equally with other professions, in fact more so than many, as it ranks equal with professions which can boast hundreds of years' standing, and is still improving. I do not mean to say it has reached the same degree of perfection, but it is recognized as a science, and can claim kindred with human medicine. They spring from the same source. To the Agriculturist, and especially to the owners of Stock here in Canada, where qualified Veterinary practitioners are few, a knowledge of the diseases most common to Cattle and Horses is of great advantage, not only as to treatment, but what is better, prevention, especially where there is much quackery carried on. In fact a person ignorant of the nature of disease, had better trust more to nature than to resort to such severe measures as are sometimes used, which instead of relieving only aggravate the disease. Some poor animals receive too much treatment, and I have met with not a few cases of such in Toronio.

In Britain, teaching the farmer how to treat his Stock does not do away with the services of the Veterinary Surgeon. He may help himself when no other means are at hand, but he is not vain enough to think that he can supersede the regular professional man. On Continental Europe and in Britain, the services of the Vet-



erinary Surgeon, I may say, are almost in as much request as the services of the Medical man, and I have no hesitation in saying that such services will be recognized in Canada, for nowhere are the people more intelligent and persevering, and the stock produced in this country will compare favorably with those of any other.

/ From the Scotch Farmer and Horticulturist.

### The Diseases of the Pig.

There are many admirers of the "payer of rents" who bestow as much care and attention to the sty as the lord of the Manor does to his favourite horses. Cleanliness, good food, and regularity in feeding, &c., tend to develop a pigling into the proportions—frightful to the eyes of many—which insure a prize at agricultural shows. We rather admire the cleanly fed pig, not overburdened with fat, which many of the thrifty villagers in England rear, in order to eke out the scanty wages on which a large family has to be kept. Disease now and then appears amongst these animals, but one of the most frequent causes of death and blighting hopes is perhaps the hand of the quack, who, if consulted, should the pig seem out of sorts, may try his hand at giving it a dose of castor-oil, when, as in the process of shearing such an animal, he gets "more noise than wool," as a few loud screams precede the effect of the physic, which far more frequently kills than cures. There is no animal so easily choked as a pig; and we can mention several instances in which young practitioners have poured mixtures fearlessly into the mouth of a screaming pig, but only to feel a dead weight on their hands and see the poor animal stretched lifeless at their feet. It is therefore a rule that tasteless medicine in powder should alone be used for this animal, and the most valuable is tartar emetic. There is no medicine more generally useful in the diseases of the pig, and it is given in some cases in doses sufficiently large to produce vomiting—that is to say, from five to ten grains in a little slop. It is better to give rather a full dose for such a purpose than too small a one, because if the effect is not at once apparent, the drug enters the system and does more harm than good. We do not advise the combination with calomel, but a very worthy rival to antimony in the estimation of some of the best informed veterinarians in the diseases of the pig is the white hellebore in doses of from five to fifteen grains. This drug is an active nauseant readily taken in food, and is regarded as a specific in the frequent and severe attacks of sore throat, which so often present a malignant character in the pig. But we must revert to the administration of tartar emetic in small doses, repeated at short intervals. About a third of a

grain, with ten grains of nitre, given in a little slop several times a day, and stopped when it induces sickness. In severe inflammatory affections, we can recommend this even more than the white hellebore. Although Youatt mentions antimony as an ingredient in many applications for this animal, it is not to be recommended, and we prefer cleaner mixtures than train-oil and sulphur, &c.; but half an ounce of white hellebore, over which a quart of boiling water is poured, constitutes a good lotion for this disease in the pig. White hellebore is, in some animals, a very dangerous poison, but the pig appears to resist its effects in a remarkable manner; and Tabourin, one of the most distinguished authors on veterinary medicines, says that the *poisonous* dose of white hellebore is unknown. As a useful purge for the pig, we may mention a couple of croton beans bruised and mixed with food. Nitre and sulphur are amongst the remedies often of service, and easily administered in food.

The foregoing remarks on medicines to be used for the pig are, we think, called for in agricultural journals, because far too little attention is paid to the kind of medicine, and mode of administration to be adopted, in treating the disorders of the porcine tribe.—Bleeding is the great and universal panacea; but we do not agree with Youatt when he says "this is a most useful and necessary operation, and one which, in many diseases, is of vital importance." It is far less called for in the pig than other animals, and we cannot sufficiently deprecate the plan of docking a bit off the tail, or cutting the ear of the pig whenever he appears a little mopish. Paddy's story imparts a useful lesson. He bled the pig so often by cutting the tail, that in one attack the animal died, because, said Paddy, "he had no more tail to cut, and had to wait for it to grow again." The amount of blood lost by the tail is trifling, and the operation may be justly condemned as useless.

To see a sick pig is in the estimation of some even more rare than seeing a dead donkey, and it may be deemed a waste of time to devote valuable space to the consideration of the diseases of the animal. But there are those whose experience would indicate a heavy mortality, and it is undoubtedly the fact that very dangerous contagious fevers, destructive parasitic disorders, and other maladies are to be witnessed in well-stocked sties.

Just as all diseases of the dog are called "distemper," many of those of the horse are termed influenza, and a large number in cattle are at once declared to be pleuro-pneumonia, so are all the diseases of the pig known by the absurd name of measles. We say absurd because there is no similarity at all between the many forms of disease termed measles in the pig and the same affection as seen in man.

We could cite several instances of sudden deaths in the pig which veterinarians have declared to be due to measles, whereas this name has been applied by the better informed exclusively to that speckled condition of the skin due to hydatids beneath it, and which hydatids—all members of the genus *Cysticercus*—pervade the soft tissues in the body, and if swallowed uncooked, produce tape-worm in man. This fact alone proves the importance of knowing more than is usually done regarding pig diseases.

We have recently discussed the injurious effect of overfeeding horses, sheep and cattle. We can furnish an admirable illustration of the *plethoric* state in pigs. Our readers must not forget that *plethora* signifies that condition of the system when the blood is in excess both as to quantity and richness; but chiefly the latter. A brewer in Edinburgh kept a few young pigs to supply himself with choice morsels of pork and ham. During the past winter on a showery day, the pigs were declared to be trembling, foaming, and fuming. All, without exception, manifested symptoms of disturbance, varying in severity, but the best were most dangerously ill. Three died in rapid succession, and advice was sought. The poor pigs had received an extra rich supply of food, containing a heavier proportion of good barley than they were accustomed to; their high condition would not admit of such an addition to their supply, and they were thus destroyed. Our readers will perhaps remember the instance before recorded of high fed cattle being killed by a too liberal supply of the best oil-cake. It is a parallel case to the one here mentioned among the pigs.

It is evident that moderation in feeding, and perhaps an occasional dose of medicine, are as essential for the health of the pig as for that of other domestic quadrupeds.

**BOTS IN HORSES.**—The editor of the *Indiana Farmer* says he publishes a receipt for the third time, by special request of those who have used it with perfect success. It is as follows:—

"Take a tablespoonful, a little heaped, of alum, and the same quantity of copperas, pulverize them fine and put them into a pint of vinegar. Pour it down the horse's throat. It will generally afford relief in five or ten minutes."

### Miscellaneous.

#### Historical and Scientific Facts about Petroleum.

Within the last three years there has sprung up in this country an important and extensive branch of industry—the refining of petroleum,

or, as it is sometimes called, a mineral oil. This is already a staple article, and its use as an illuminator, is becoming every day more extended. When properly manufactured it is not explosive, it affords a brilliant flame, it can be furnished at a moderate price, and, moreover, its sources of supply in this country are abundant. The subject is one of so much general interest that we are induced to publish the following interesting article concerning this substance, which was sent to us by a member of the Chemical Society of Schenectady, N. Y.:—

Petroleum is not of constant composition, but is a variable mixture of numerous liquid hydro-carbons, as benzole, naphtha, kerosolene, &c., with paraffine, naphthaline, and asphaltum, solid hydro-carbons. It is of a very dark green colour, and in density varies from a thin fluid, lighter than water, to a thick viscous liquid, heavier than water. The lighter qualities yield the larger proportion of burning oil.

The evidence of the most ancient occurrence of petroleum is among the ruins of Ninevah, whose existence dates back more than two thousand years before the Christian era. In the construction of this city, an asphaltic mortar was extensively employed, the asphaltum being obtained by the evaporation of petroleum.

A later mention is found in the accounts of Babylon, whose walls were cemented with asphaltum, which was poured, in a melted state, between the blocks of stone, and an indestructible mortar thus secured. This asphaltum was procured from the fountains of Is, which were about one hundred and twenty miles above Babylon, on the Euphrates. Together with saline and sulphurous water, it issued from a rock and was conducted into large pits. The oily matter was then skimmed off and solidified by atmospheric evaporation. These springs, from the abundance of their products, attracted the attention of Alexander, Trejan and Julian, and even at the present time, asphaltum procured from them is sold in the neighbouring villages of Hits.

From time immemorial asphaltum has been found on the shores of the Dead Sea, and this is one of the most remarkable localities for it. This sea, as is well known, is of supposed volcanic origin; and is the probable site of the ancient cities of Sodom and Gomorrah. Its surface is thirteen hundred feet below the surface of the ocean, and it has been fathomed to the depth of two thousand feet. In several places no bottom has been reached, and, owing to internal convulsions, the depth changes from time to time. The water is very dense, holding in solution twenty-five per cent. of solid matter, of which seven per cent. is salt. The bituminous substance is up-thrown from below and towards the centre of the sea it is found in a liquid state, like petroleum; but it is probably solidified by evaporation, as it appears upon the shores in hard compact masses. The explanation of this phenomenon is that a con-



nection between the sea and some internal volcano exists, whence this substance is ejected.

At the vicinity of the Caspian, the Bakoo springs have yielded large quantities of oil, and are widely celebrated. Some of the Persian wells have furnished fifteen hundred barrels a day, and throughout this region this material, under the name of Naphtha, is very generally burnt for its light.

At Rangoon, in Burmah, petroleum has been obtained for many years, and at this time there are over five hundred wells, which annually afford four hundred thousand hogsheads. The oil occurs in a stratum of blue clay; wells about sixty feet deep are dug, into which the petroleum oozes. This is sometimes used in its natural state, but more frequently it is first purified by distillation with steam. The raw material is also mixed with earth and used as fuel.

In Europe there are a few abundant springs. On one of the Ionian Islands there is an oil fountain which has flowed for over two thousand years: and the oracular fires of ancient Greece have been attributed to similar sources. Oil springs also occur in Bavaria, in the Grand Duchy of Modena, at Neufchatel, at Clermont and Gabian in France, and near Amiano in Italy. Petroleum procured from the last named locality is used for lighting the city of Genoa, but elsewhere in Europe it is not employed, to any extent, as an illuminator.

On this side of the ocean there is an enormous quantity of this substance. Upon the Island of Trinidad, one of the West Indies, at a distance of three-fourths of a mile from the sea, is a lake of asphaltum three miles in circumference. Near the banks the asphaltum is hard and cold, but as you approach the centre the softness and the temperature increase, until finally it is liquid and boiling. From the bubbling mass proceeds a strong, sulphurous odour, which is perceptible at a distance of ten miles. Between the banks of the lake and the shore of the island is an elevated tract of land, covered with hardened asphaltum, upon which vegetation flourishes. The explanation put forward in connection with the Dead Sea, is equally applicable in this case.

Upon others of the West Indies petroleum has been obtained, as well as at several places in Central and South America; but it is in the northern portion of this continent that the abundant reservoirs of this substance are located; and it seems truly wonderful that their extent and richness should not have been discovered at an earlier period. For many years the Seneca Indians collected petroleum, and, under the name of Seneca oil, sold it as a remedy for rheumatic complaints. At numerous places in the Middle States it was found in salt borings, and was collected and burnt by the farmers, but it was not till August, 1859, that it was obtained in noticeable quantities. At this time oil was "struck" upon Oil Creek, Venango County, Pennsylvania,

by sinking an Artesian well to the depth of seventy feet, and for many weeks a thousand gallons a day were pumped from it. The news of this discovery spread far and wide, and gave rise to an "oil fever." Thousands flocked to this vicinity in the hope of making their fortune. Before the close of 1860 there had been over a thousand wells bored, many of which were productive, but a large proportion returned nothing. Some of the adventurers have been very successful, and have made large amounts of money; but, as in all commercial "fevers," a large number of persons have been utterly impoverished by their speculations. The mere sinking a well by no means insures a bountiful supply of oil. The petroleum is stored in fissures formed by the upheaving of the earth's crust by volcanic action; and these fissures are perpendicular rather than horizontal in tendency, as is proved by the fact that at wells but a few rods apart, the oil is "struck" at very different depths. The lowest parts of the fissures contain water, above which is oil, while in the highest portion there is a quantity of gas. If, therefore, the well strikes the fissure at the lowest part, the water will be forced up by the pressure of the supernatant oil, and gas. Persons ignorant of the formation sink a well at random, and perhaps strike a fissure; but obtaining nothing but water, they abandon the spot as worthless, whereas after removing the water by pumping, a large quantity of oil might be obtained.

In some localities in Ohio, as is the case in Burmah, the ground is saturated with the oil, and wells several feet in diameter are dug, into which the oil oozes. Porous limestone, containing petroleum, is found in some sections of the West, and has been subjected to distillation with profitable results.

In regard to the origin of petroleum, scientific authorities differ; but the theory most generally favoured is, that it is the product of the slow distillation, at low temperatures, of organic matter in the interior of the earth; the vapours being condensed in the previously-mentioned fissures and the surrounding soil. The lake of Trinidad and the bituminous matter of the Dead Sea may also be referred to a similar source. But for how many centuries must this operation have been going on to have effected such enormous results?

Of the many uses to which petroleum and its derivatives are applied, that of illumination is the most important; and the process of refining is extremely simple. The crude material is put into a large iron retort, connected with a coil of iron pipes, surrounded by cold water, called the condenser. Heat is applied to the retort, and from the open extremity of the condenser, a light coloured liquid of strong odour soon flows. This is naphtha, and is very volatile and very explosive. Some refiners mix it with the burning oil, and numerous accidents have resulted from such mer-

enary indiscretion. It is usually run into a separate tank. After the naphtha has passed over, the oil used for illumination distills off. Steam is now forced into the retort and the heavy lubricating oil driven over. There now remains a black, oily, tarry matter, sometimes used to grease heavy machinery, and a black coke, employed as fuel. There are, therefore, five substances separated in this operation, but only the first three are of any economic importance.

The naphtha is used as a substitute for turpentine in paints, or by repeated distillations the benzole is separated from it and employed to remove spots from fabrics. This, however, is rather a drug in the hands of the refiner.

The burning oil, as it comes from the retort, is of a yellow colour, and in order to remove this, it is placed in a large lead-lined cistern, and agitated with about ten per cent. of sulphuric acid. After the acid and impurities have subsided the oil is drawn off into another tank and agitated with four per cent. of soda lye. This last operation is to remove any acid remaining with the oil, and also to extract the residue of the colouring matter. In fact it is sometimes employed alone and a very good oil obtained. The oil is now agitated with water to remove the soda lye, and is then ready for consumption. The colourless oil is by no means the most economical, but on the contrary more light is obtained from the yellow article.

The heavy oil is cooled down to 30 degrees Fah. when the paraffine crystallizes out, and is separated from the oil by pressing. It is further purified by another pressing and by alternate agitation, in a melted state, with sulphuric acid and soda lye. It is then moulded into candles. It is a curious fact that the composition of paraffine and good coal gas is exactly the same.

In Egypt a substance derived from petroleum was used in embalming bodies; and in Persia and the neighbouring countries asphaltum is used to cover the roofs of the houses and to coat the boats. In France asphaltic pavements have been successful in several cities, and for the protection of stone no material is better adapted. Mixed with grease the Trinidad asphaltum is applied to the sides of vessels, to prevent the borings of the teredo, and with quicklime it affords an excellent disinfectant. Among the products of the distillation of petroleum are naphthaline and kerosolene. The former is the substance from which is obtained aniline, the base of the beautiful colours mauve, magenta, and solferino. The latter has been proposed as a substitute for chloroform and ether. Many other substances have been separated, but as yet none of them have been applied. As this is comparatively a new field many discoveries may be confidently expected in the course of a few years.—*Scientific American*.

## Great Oil Spring.

The somewhat celebrated Mr. Shaw of Oil Springs village, is not destined to share alone the honour and profits of that remarkable locality. Yesterday, Tuesday, the 18th inst., another person, Mr. Bradley by name, having been boring at a spot situated about two hundred yards distant from Mr. Shaw's spring and having reached to about an equal depth in the rock as he attained, was rewarded for his exertions by an up-flow of oil to an extent of 100 gallons per minute. There being no means of saving it, it has overflowed the land, as was the case with Shaw's spring, when it first flew up, and a pitiable waste is going on. Black Creek has become literally a sewer for oil, and its waters are covered over to a depth of fully three inches with the dark green fluid, the wastes from the surrounding wells and springs. The last success of Mr. Bradley was quickly known to the men in the district, each of whom left his well and proceeded to witness the new wonder. They saw in astonishment, and returned to their respective lots, each determined to bore deeper and deeper until the source of the supply should be tapped, and each possess in his own right not an oil well merely, but a veritable oil spring, which should bubble up spontaneously to the surface.

The fact is, the whole district is impregnated with oil. The soil is made viscid by it. A piece of earth adheres to your boot, and you become at once odoriferous and offensive. Oil is every where. One tastes it in the beer, and even whiskey fails to kill it out. The flavor is detected in the bread. You eat bacon, but you taste oil. You smell it and taste it in the air, and hold your nose to lessen its ungracious influence upon the olfactories. You go to bed but the sheets are oily. You open a door, and your hand which has touched the handle has caught the contagion. You proceed to wash, and find a film of oil upon the water, and as you wipe your face, the skin is imbued by an oleagenous deposit from the towel. Oildom asserts its sway, and Oil is King?

But the means of transporting the immense supply of oil is altogether inadequate to the necessity of the case. Lumbering barrels at \$2 each are behind the age, even if they were to be had in sufficient numbers, and it is imperative, therefore, that some, new mode of carrying away the precious unctuous flow should be adopted. The plan now proposed is, to lay down a five inch iron pipe to Sarnia, and cause the oil to flow into a common reservoir there, and from thence to be filled into iron tanks, and so conveyed to the seaboard. No vessels or implements once used in this traffic are available for other purposes, as the odour from the oil is so pungent and persistent, that it spreads itself into every cranny of a ship in which any



large quantity of it may be conveyed. Not long since a few barrels of oil were taken across the Atlantic in a large grain vessel, and the result was thus the great portion of the grain was spoiled. It is thought, then to press into the service, as a kind of retributive justice, the old whale ships, for if the supply of the oil continues, the whales will be left to enjoy their monstrous gambols undisturbed by the harpoon. To pass from the pursuit of the whale to be the carriers of ready-made oil, would not be difficult, though decidedly unromantic.

If some such plan were adopted, this natural oil well, if the supply continues, become one of the most useful and economical substances known, and will find its way into hundreds of uses. Already such experiments have been made as to convey the conviction that gas of a superior kind can be made from it at sixty cents per thousand feet, while for the ordinary purposes of light, the supply being so plentiful and apparently unlimited, the illuminating fluid now sold must fall in price to such an extent as to make artificial light, to use a vulgar phrase "as cheap as daylight." From whatever point this subject is viewed, whether as regards the origin of the oil; its supply; the extent of country under which it is found: the uses to which it can be applied; the revolution it is making in the cost of artificial light, in each and all it is most wonderful, and we question if a more interesting sight than that of the Canadian Oil Springs at Wyoming exists in any part of the world.—*London Free Press*.

**THE LAND OF PARADOX.**—The quicksilver, I find, will sometimes disappear, like the water in the pipe of the Great Geyser, and even then the weather will be tolerable. But that is as it should be, and quite in keeping with the regions of paradox which we are approaching, where the magnet forgets its affection for the pole; where as many as nine suns have been seen in winter without affording the warmth of one; where the favorite time for thunder and lightning is mid-winter; where a river of to-day becomes a mere fountain of to-morrow, and *vice versa*, where islands rise out of the ocean, and sink down again, as if nothing had happened; where tiny clouds, according to the testimony of voracious travellers, at times swoop down like falcons on the head of the wayfarer and disorder his brains. A land out of which is dug that mysterious selturbrand which geologists have been adding their brains to explain the origin of, but in vain; a land where the people get their wood from the ocean and where ocean cod are taken in inland lakes; where, if you find a stalactite, it is due to fire instead of water; where dark ducks with white rings round their eyes swim in the boiling Hyers—and where ice and fire are often on the best terms with each other. So that fine weather and a low glass are really quite the correct thing.—*The Oronian in Iceland*.

**A PLACE WHERE NO WINTER IS.**—The exceptional warmth of the winter climate of Mentone, even for the Riviera, is proved by the presence of groves of large, healthy lemon trees, which occupy the sheltered ravines and warmer hill-sides, wherever water can be obtained, constant irrigation, summer and winter, being necessary for their cultivation. They are, indeed, much more numerous than the orange trees, although many fine plantations of the latter are found throughout the district. Orange trees can bear without injury several degrees of frost, whereas one degree destroys the fruit of the lemon tree, and two or three degrees destroy the tree itself. On one side of the second bay, near the Port St. Louis, the warmest and most sheltered region of Mentone, the side of the mountain is partially covered with lemon trees, which ascend on terraces to a considerable height above the sea. In these "warm terraces" winter certainly may be said not to exist. Throughout its entire duration insect life is abundant, and the swallows consequently never migrate. They are constantly seen arching among the rocks. The harebell, the red valerian, violets, and our own pretty veronica, flower in December and January in this favoured spot, long before they appear elsewhere. The lemons produced at Mentone are known throughout northern Europe, and fetch a high price in the market. The lemon tree at Mentone flowers all the year round, never resting, and bears four distinct fruit crops. Its existence in groves of large trees, from twenty to thirty or more years old, without artificial protection, and its profitable cultivation throughout the year, prove that there must have been freedom from frost for many years. I was told, however, that about twenty-five years ago nearly all the lemon trees in the country were destroyed in one night, which may account for no very old trees being seen.—*Mentone and the Riviera as a Winter Climate*; by J.H. Bennet, M.D.

**THE MOTH'S WING.**—Touch with a camel's-hair brush any part of the wing, so as to remove scales, dab the brush on a pane of glass, put it under the microscope, and then see how each particle of the almost imperceptible and impalpable coloured dust which clothes the wings becomes manifest as an elegantly formed scale, sculptured with designs of singular beauty and regularity, formed of at least two, if not three separate membranes, and waved, toothed, or fringed at the extremity, according to its position on the wing. Just consider how many hundreds of thousands of these scales are needed to cover a surface so great, and the inconceivable care which is required, not only in making them, but in setting them in rows more regular than the slates on a house-top, each overlapping the other, and arranged so as to defend the delicate membrane of the wing from moisture. You cannot wet a moth's wing with water, for it runs off in drops as if the wings were covered with oil.—*St. James's Magazine*.

### The Poet Laureate and the Late Prince Consort.

A new edition of the *Idylls of the King* contains the following dedication:—

These to his memory—since he held them dear,  
Perchance as finding there, unconsciously,  
Some image of himself—I dedicate,  
I dedicate, I consecrate, with tears.  
These Idylls,

And, indeed, he seems to me  
Scare any other than my own ideal knight,  
Who revered his conscience as his king;  
Whose glory was redressing human wrong;  
Who spake no slander—no, nor listened to it;  
Who loved one only; and who claved to her—  
Her, over all whose realms to their last isle,  
Commingled with the gloom of eminent war,  
The shadow of his loss moved like eclipse,  
Darkening the world. We have lost him; he is gone;

We know him now: all narrow jealousies  
Are silent; and we see him as he moved,  
How, modest, kindly, all-accomplished, wise,  
With what sublime repression of himself,  
And in what limits, and how tenderly—  
Not swaying to this faction or to that;  
Not making his high place the lawless perch  
Of wing'd ambitions, nor a vantage-ground  
For pleasure; but, through all this tract of years,  
Wearing the white flower of a blameless life,  
Before a thousand peering littlenesses,  
In that fierce light which beats upon a throne,  
And blackens every blot: for where is he  
Who dares foreshadow for an only son  
A lovelier life, a more unstain'd than his  
Or how should England, dreaming of his sons,  
Hope more for these than some inheritance  
Of such a life, a heart, a mind as thine,  
Thou noble Father of her Kings to be—  
Laborious for her people and her poor,  
Voice in the rich dawn of an ampler day,  
Far-sighted summoner of war and waste  
To fruitful strifes, and rivalries of peace,  
Sweet nature gilded by the gracious gleam  
Of letters, dear to Science, dear to Art,  
Dear to thy land and ours—a Prince indeed,  
Beyond all titles, and a household name,  
Hereafter, through all times, Albert the Good?

Break not, O woman's heart, but still endure;  
Break not, for thou art Royal, but endure,  
Remembering all the beauty of that star  
Which shone so close beside thee; that ye made  
One light together, but has past and left  
The Crown a lonely splendor.

May all love

His love, unseen but felt, o'ershadow thee;  
The love of all thy sons encompass thee,  
The love of all thy daughters cherish thee,  
The love of all thy people comfort thee,  
Till God's love set thee at his side again.

VALUE OF A DEAD HORSE IN LONDON.—Hair from 8d. to 1s.: used for haircloth mattresses: in crushing seed in oil mills. Hide and tendons, 8s.: leather, glue, gelatine. Flesh, £1 8s.: meat for men, dogs, and poultry. Heart and tongue: a mystery. Intestines: covering sausages and the like. Fat, 3s 4d.: used for lamps after distilling. Bones, 4s. 6d. per cwt.: knife handles, phosphorous, and superphosphate of lime. Hoofs, 8s. to 10s.: buttons and gelatine. Shoes 2s. to 3s.: old iron. Total value, from £2 17s. 6d. to £3 4s. 10d.

### Editorial Notices, &c.

PURE SHORT HORN STOCK.—We beg leave to direct the attention of breeders of Short Horned Cattle, to the advertisement in another place of pure bred cattle for sale by Dr. Phillips, of Prescott, C. W., the stock being at present placed for keeping on the opposite side of the river, near Ogdensburgh, N. Y. These cattle were exhibited at the London Provincial Show last September, where they gained several premiums, and although from their recent passage across the Atlantic, and rather poor kept since arrival, they were not in so high condition as they should have been to show to advantage, they yet attracted the attention of connoisseurs by their good points and evident high breeding. The cattle are from some of the best herds in the old country, and have all good herd book pedigrees. We understand that private reason, have induced Dr. Phillips to return to the old country to reside, instead of settling permanently in Upper Canada, as was his intention when he imported his cattle, but we trust that the stock may remain in the country for the improvement of our native herd.

### Imported Thorough Bred Cattle FOR SALE.

THE SUBSCRIBER OFFERS FOR SALE, the whole of his lately imported herd of improved Short horns. Full pedigree for each, authenticated by reference to Coates' English Herd Book.

G. W. PHILLIPS,

Ogdensburgh, N. Y.

March 6th, 1862.

4in.



**Agricultural, Horticultural, &c.**

The following Books on these subjects to be had at

**BAIN'S BOOK STORE,  
46 KING STREET EAST.**

|                                           |        |
|-------------------------------------------|--------|
| Dodd's Modern Horse Doctor, cl.....       | \$1 00 |
| Do. American Cattle Doctor, cl.....       | 1 00   |
| Greenon's Treatise on Milch Cows. cl. .   | 60     |
| Mayhew on the Horse, 8mo.....             | 2 50   |
| Youatt & Martin on Cattle, 12mo.....      | 1 25   |
| Youatt & Spooner on the Horse.....        | 1 25   |
| Clater's Cattle Doctor, 12mo.....         | 1 25   |
| Clater's Farriery, 12mo.....              | 1 25   |
| Stewart's Stable Economy, 12mo.....       | 1 00   |
| Miles on the Horse's Foot.....            | 50     |
| Thomson on the Food of Animals.....       | 75     |
| Dogs and their Management by Mayhew.      | 63     |
| Milburn on the Cow.....                   | 25     |
| Martin on Cattle.....                     | 38     |
| Youatt on the Horse.....                  | 25     |
| Martin on the Sheep.....                  | 25     |
| Dayle on Domestic Poultry.....            | 1 50   |
| Watts on the Poultry Yard.....            | 25     |
| Pigeons and Rabbits by Delamee.....       | 25     |
| Martin on the Pig.....                    | 25     |
| Boussingault's Rural Economy.....         | 1 25   |
| Dama's Muck Manual.....                   | 1 00   |
| Sibson's Agricultural Chemistry.....      | 38     |
| Johnston's Agricultural Chemistry.....    | 1 25   |
| Johnston's Elemens.....                   | 1 00   |
| Burn's (R. S.) Hints for Farmers.....     | 25     |
| French on Farm Drainage, 12mo.....        | 1 00   |
| Flint on Grasses.....                     | 1 25   |
| Langstroille on the Honey Bee.....        | 1 25   |
| Neil's Fruit, Flower and Vegetable Garden | 1 00   |
| Bridgeman's Kitchen Garden.....           | 60     |
| Buist's Family Kitchen Garden.....        | 75     |
| Fessenden's American Kitchen Gardener     | 25     |
| Thomas' American Fruit Culturist.....     | 1 25   |
| Field on Pear Culture.....                | 1 00   |
| Barry on the Fruit Garden.....            | 1 25   |
| Coles' American Fruit Book.....           | 50     |
| Allen on the Grape Vine.....              | 1 00   |
| Chorlton's Grape Grower's Book.....       | 50     |
| Leuchars on Graperies.....                | 1 25   |
| Saunders' Orchard Honsel.....             | 40     |
| Pardee on Strawberry Culture.....         | 60     |
| Buist's Flower Gardener's Directory.....  | 1 00   |
| Breck's Flower Garden.....                | 1 00   |
| Johnson's Lady's Flower Gardener.....     | 25     |

Any of these Books can be sent by Post to any part of Canada, upon remitting the price and at the rate of 20 cents on the Dollar for postage.

Toronto Feb. 28, 1862. 4 t.

**FOR SALE.**

**A** LOT of thorough bred improved Berkshire Pigs of various ages.

**R. L. DENISON,  
Dover Court.**

Toronto, Aug., 1861.

**BOARD OF AGRICULTURE.**

**T**HE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location, adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

Toronto, 1861.

**HUGH C. THOMSON,  
Secretary.**

**Notice of Co-Partnership.**

**T**HE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of **James Fleming & Co.**

**JAMES FLEMING,  
GEORGE W. BUCKLAND.**

**NOTICE.**

**JAMES FLEMING & CO.,** Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

**JAMES FLEMING** will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

**FOR SALE.**

AT

**WOODHILL, WATERDOWN P. O.**

**M**R. FERGUSSON expects to have several pure Durham bull calves to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the well known **DUCHESSE** tribe, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—First come, first served.

Waterdown, Nov. 14, 1861.

4-t.

**THOROUGH BRED STOCK FOR SALE.**

**T**HE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

**JOHN SNELL,**

tf.

Edmonton, P. O., C. W.

**VETERINARY SURGEON.**

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

**FOR SALE.**

**A FEW PURE-BRED SOUTH-DOWN RAMS**  
and Ewe Lambs, from

**IMPORTED STOCK,**

Selected from the Best Flock-dealers in Dorset, Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

JOHN SPENCER,  
Brooklin, Post Office,  
Ontario County C. W.

Oct. 12th, 1861.

**THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co.,  
King Street East, Toronto.

**FOR SALE.**

**A**LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Cochmhor, Galt P. O., Oct. 19, 1861.

**Contents of this Number.**

|                                              | PAGE. |
|----------------------------------------------|-------|
| The Germination of Seeds.....                | 129   |
| Agricultural Hall, Toronto.....              | 130   |
| An Experiment in Wheat Growing, in 1766..... | 132   |
| Provincial Exhibition of 1862.....           | 132   |
| Maple Sugar.....                             | 133   |
| The Oiser Willow.....                        | 135   |
| Experiments on Manure.....                   | 136   |
| Insects the past year.....                   | 137   |
| Experiments on the Potato Disease.....       | 138   |
| Analogy between Plants and Animals....       | 141   |
| Care of Cows before Calving.....             | 142   |
| How to Feed out Roots.....                   | 143   |
| The Royal Farms, England.....                | 143   |
| Alsike Clover.....                           | 146   |

**AGRICULTURAL INTELLIGENCE :**

|                           |     |
|---------------------------|-----|
| Spring Shows.....         | 147 |
| Patents of Invention..... | 147 |

**HORTICULTURAL :**

|                                      |     |
|--------------------------------------|-----|
| Fruit Grower's Association.....      | 147 |
| Fruit Culture in Orchard Houses..... | 148 |

**THE POULTRY YARD :**

|                           |     |
|---------------------------|-----|
| Something about Hens..... | 149 |
|---------------------------|-----|

**VETERINARY.**

|                                         |     |
|-----------------------------------------|-----|
| The Progress of Veterinary Science..... | 150 |
| The Diseases of the Pig.....            | 153 |
| Bots in Horses.....                     | 154 |

**MISCELLANEOUS :**

|                                                                       |     |
|-----------------------------------------------------------------------|-----|
| Historical and Scientific Facts about Petroleum.....                  | 154 |
| A Great Oil Spring.....                                               | 156 |
| The Land of Paradox, A Place where no Winter is, The Moth's Wing..... | 157 |
| The Poet Laureate and the late Prince Consort.....                    | 158 |
| EDITORIAL NOTICES, &c.....                                            | 158 |

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
Canadian Agriculturist.

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, MARCH 16, 1862.

No. 6.

The Cultivation and Preparation of Flax.

Flax-culture is a subject that has already received attention in the pages of this Journal, particularly in the volumes of the last and preceding years. As the matter is daily acquiring more importance in Canada, and has already assumed a practical character in more than one locality, we shall proceed, in accordance with instructions received from the Board of Agriculture, at its last meeting, to throw together some plain and practical observations on the most approved methods of the culture and treatment of flax; to which both the soil and climate of Canada are generally well adapted.

Flax of one kind or another has been cultivated and employed for textile purposes from remote antiquity. It is several times mentioned in the Bible. The Greeks were well acquainted with the uses of the plant; and most of the writers on Roman husbandry distinctly refer to it, sometimes with considerable detail, particularly Pliny, who treats with great minuteness of its culture, and subsequent preparation. After the fall of the Roman Empire, but little can be learnt respecting it till the twelfth century, when we learn from documents that have come down to us, that flax has been regularly cultivated both in the British Islands, and the continent of Europe. Much curious legislation took place in reference to the culture and manufacture of

this plant during several centuries, some of which would be both amusing and suggestive to our readers, if space would permit us to descend to particulars.

There are several species of flax, some of which are to be found either cultivated or indigenous in countries in each of the four quarters of the world; and also in Australia and New Zealand. Most of these possess fibres more or less suitable for textile purposes; but only a few have attained to any agricultural or commercial importance. The only species that can be said to have any claim on the farmer's attention for general cultivation, is the *Linum usita tissinum*, or common flax; "which is an annual plant, with delicate branching, round stem, from 18 to 24 inches, covered thinly with narrow glaucous, thin ribbed leaves, and bearing at the ends, pale, blue, shining flowers. The flower heads possess four, or more commonly five sepals; the petals are always equal in number with the sepals; the stamens are also equal in number, and alternated with them. The flowers are succeeded by a seed-pod, or ovary, agriculturally known as the "boll" or "capsule," with ten divisions, or rather five perfect cells, which are again separated by an imperfect partition, extending from its outward wall. In each of these cells is found a single seed, of a flattened oval shape, of a more or less dark brown colour, mucilaginous to the taste, and containing a large proportion of a brown-

ish yellow oil, possessing the peculiar though slight smell characterizing linseed oil. This oil is readily obtained by pressure from the seed; the residuum being the well known feeding substance termed 'linseed cake.'

*Soils suited to flax.*—This plant may be said to have a wide range both of soil and climate, and is therefore well adapted to an extended course of husbandry in most of the countries occupying, at least, the temperate zone. It can be grown by judicious culture on sands, gravels, marls, and clays; alluvial or swampy lands when thoroughly drained and cultivated will often produce heavy crops. In Ireland, flax is sometimes successfully raised on peat-bog lands, with a clay substratum. But the best soil is a sound, dry, deep loam, resting on a somewhat porous and calcareous clay, otherwise termed marl. The good wheat soils of Canada are well adapted to the growth of flax. It should be borne in mind that stagnant water in the soil or subsoil is particularly injurious to the roots of this plant; and in such a case, thorough underdraining would be an essential condition of success.

*Preparation of the soil.*—Land intended for flax should be deeply ploughed in the fall, and well water-furrowed, that the surface be kept dry. This precaution will be necessary, even if the ground be naturally dry, or rendered so by underdraining, since in this country water will be sure to stagnate in low places in spring, whether the soil have covered drains or not. The ground should be again cross-ploughed in spring as soon as it is sufficiently dry; care being always taken not to get upon it when in a wet state. Instead of using the plough in spring,—provided the land had been deeply ploughed in the fall, the cultivator is considered by many to be preferable. This instrument, if sufficiently strong and heavy, will pulverize the soil 8 or 10 inches, and keep most of the dry, friable matter of the surface still at the top, which the plough will of course turn under, and bring to the top earth in a less favorable state for the seed bed. At all events, a deep tilth is always desirable, and the surface for several inches deep should be fine and mellow for flax seed to germinate and start advantageously. Such

a surface our long and intense winter frosts naturally produce in spring. Harrowing and rolling must be had recourse to as often as circumstances require to get a fine, deep tilth. The roots of flax being of a fibrous character, extend laterally and vertically to a considerable distance in search of food, frequently from 2 to 3 feet, where the soils suitably prepared.

Depth of tillage always adds to the feeding ground of a crop, and places increased supplies of mineral food at its disposal, and thus aids materially the development of its bulk. Although soils rich in organic matters are not generally so suited for flax as those of a medium class, still it is always desirable that the soil should be in good heart and condition, as the flax crop occupies the ground only a short time—fourteen to sixteen weeks, and must find its needed supply of food within a limited range, and in an available form. This condition of the soil is materially affected by the state of the division of its particles; a fine tilth, by exposing an extended surface to the action of the air, and of the rootlets of the plant, assists directly in the preparation of the food, and also in giving the plants better access to it. \* \* \* Keeping the ground *perfectly clear of weeds* is of essential importance to all crops, especially so to the flax crops, as the plant in its cultivated state is of a delicate and slender habit, but ill fitted to rough it in the fields, with the stouter and stronger indigenous plants, of a quick habit of growth, and of perhaps less powers of assimilation than those of our other ordinary crops; therefore, if we wish to carry on a successful cultivation, we must assist it by those means which experience and a proper knowledge of the requirements of the plant have shown to be usually followed by satisfactory results."

It is not deemed generally advisable to apply manure directly to the flax crop; strong manures especially, produce a coarse, and therefore less valuable fibre. Yet it should be remembered that a heavy and remunerating crop of flax cannot be grown upon poor ground. It succeeds best after a crop that has been liberally manured; particularly after



wheat or other cereals, which have been preceded by clean and deep cultivation. Flax has long had the reputation of being a very *exhausting* crop to the soil, and in many leases in the old country, it is absolutely excluded, or so fenced in by conditions, as to amount practically to exclusion. This, no doubt arose, in great measure, from the old practice of cropping land too frequently with flax, thereby lowering its standard of fertility in much the same way as thousands of acres of originally productive soils in Canada have been reduced by the too frequent repetition of wheat. But there can be nothing *peculiarly* exhausting in flax; all crops—especially the cereals, are exhausting,—particularly when both grain and straw are sold, and not returned in any form to the land. If flax is allowed to ripen, and both seed and fibre taken away, it becomes, no doubt, a “*scouring*” crop, particularly so if it has been heavy; but the same remark is more or less applicable to wheat, barley, turnips, potatoes, &c. If the seed of the flax be used in the feeding of cattle, though the whole of the straw may be sold off the farm, the increased richness of the manure will go far to restore to the soil those elements of fertility which the crop removed. It is not generally considered advisable by some to grow flax on the same land more frequently than once in ten years; not because it exhausts the soil more than other crops, but because good flax cannot be produced at short intervals. In Belgium, where this crop is cultivated extensively and with great skill and attention, it usually follows a grain crop, particularly oats. The following rotations are mentioned with approval by the committee of the *Royal Society for the promotion and improvement of the growth of flax in Ireland*—

“A rotation that would bring flax once in 10 years:—First year, potatoes; second, barley, laid down with grasses; third year, cut for soiling; fourth year, pasture; fifth year, flax, or the one half might be better in flax, the other in oats; so that, with the return of the rotation, which would be five years, the flax could be put on the ground which, in the last rotary course, was under grain, throwing a range of ten years between the flax crops

coming into the same ground. A gentleman of much practical knowledge, recommends the following as being the most profitable:—

1. Oats, after grass and clover; 2. flax, pulled in August: then ploughed and harrowed in with 2 cwt. of guano, and 2 cwt. of gypsum, (plaster), then sown with rape; 2. potatoes or turnips, well manured; 4. wheat sown in spring, with clover and rye grasses; 5. hay and clover; grazing; 7. oats; 8. flax, and winter vetches; guano as before mentioned; 9. parsnips, well manured; 10. barley, sown with rye-grass and clover; 11. clover and hay; 12. grazing; 13. oats. In Belgium where the climate is warm and dry, somewhat resembling that of Canada, the two following rotations, with slight occasional modifications, are considered good:—1. potatoes; 2. wheat; 3. rape; 4. oats; 5. Flax, with grass seeds; 6. grass seeds; 7. barley. On the better sorts of light lands, not well adapted for wheat, we find: 1. rye and turnips; 2. oats; 3. roots, (parsnips or carrots); 4. rye and turnips; 5. flax; 6. grass seeds. In Ireland the practice is somewhat similar. The following represents the prevailing rotations in the best flax growing districts:—1. roots, (potatoes or turnips); 2. wheat; 3. flax with grass seeds; 4. seed hay; 5. grasses grazed; 6. grasses grazed; 7. oats; 8. flax. Or: 1. oats; 2. flax; 3. roots; 4. wheat with grass seeds; 5. grass seeds cut; 6. grass seeds grazed.

*Special Manure for Flax.*—Recent chemical investigations have shown that the fibre of flax does abstract from the soil certain matters, although not in so large a proportion as several other commonly cultivated crops. To supply to the soil all the matters which the plant requires, with the exception of what is abstracted by the seed, which should be returned by saving the latter, and applying the manure of the cattle fed upon it, or an equivalent, if the seed be sold, so as to leave the land in the same state of fertility as before, the following compound has been proposed by Professor Hodges, of Belfast, (who has devoted much attention to these matters), as a manure which may be sown broadcast on the land, prior to the last harrowing before sow-

ing the flax seed—For a statute acre of land:—

|                                         | s. | d. |
|-----------------------------------------|----|----|
| Muriate of Potash, 30 lb—cost about     | 3  | 0  |
| Chloride of Sodium (common salt) 28lb   | 0  | 3  |
| Burned gypsum (plaster) powd'rd, 24 "   | 0  | 6  |
| Bone dust, 54lbs. ....                  | 3  | 6  |
| Sulphate of Magnesia (Epsom salts) 56 " | 4  | 0  |

11 3

*Selecting Seed, Sowing, &c.*—It is a matter of great moment in the successful cultivation of Flax that firm, plump, and uniformly ripened seed should be obtained, as much inconvenience and often considerable loss is sustained by negligence in this particular. Foreign seed, it is said, is universally preferred in Ireland, and the Belgians always select Baltic flax for their seed purposes. "For heavy soils the Dutch seed is frequently used, which is the produce of Riga seed once grown in Flanders. The American seed was at one time tried, as being somewhat cheaper; experience however, has shown that the plants had a tendency to grow branchy instead of a single erect stem, and although good for seed purposes, a large portion of the fibre was necessarily lost in scutching. Riga seed is everywhere considered the best for seed purposes. This, however, as is the case indeed with all foreign samples, is too dirty to admit of being used directly for the flax crop; as the amount of weeds mixed up with it would not only materially lessen and lower the value of the produce, but stock the land to the prejudice of after crops. The best plan to pursue is to obtain foreign seed sufficient merely to reproduce the quantity of seed required for the flax crop; and to sow this separately in wider drills, not less than 12 inches apart, so that it may be kept entirely free from weeds, and thus furnish a clean sample for the crop of the following year. This practice is generally followed in Belgium and in Ireland, where it is commonly known and sold as seed "one year from the barrel." The seed varies, of course, considerably in price; the Riga is, however, always the dearest: the Dutch and American being offered at a lower price, are consequently preferred by some growers."

*Sowing.*—The time for sowing flax will vary according to the season and the state of the land: the earlier it is done the better,

provided the necessary conditions are favorable. It can seldom be done in this country before May. Something depends upon whether the object be for fibre or seed; if the former, then the sowing should be done as early as possible; if the latter, or seed and fibre combined, the operation may be deferred a few days. In this country, vegetation is so rapid in its processes in the summer, and the crop grows so quickly, that the plants sown late have not time sufficient to mature and consolidate their tissues, which is so necessary for the production of good fibre, and which the slower vegetation of the spring months generally secures to those sown at an earlier period.

It is important to bear in mind, that land intended for flax should not be meddled with till the surface, at least, is thoroughly dry, and that a fine deep tilth is a necessary, and most advantageous condition;—and the surface should, by repeated harrowings, &c., be made as even as possible. The proportion of seed should vary; if fibre only be desired, the sowing should be thicker than when seed merely is required. In the former case, from 2 to 2½ bushels per acre may not be too much, while in the latter, or when both the fibre and seed are sought, the quantity may be reduced. It is better, as a general rule, to sow too thick than too thin; as in thick sowing, the stems grow tall and straight, with only one or two seed balls on each at the top, and the fibre will consequently be found much finer and superior to that produced from thin sown flax, which grows coarse and branches out, producing much seed, but a very inferior quality of fibre. For this reason, it is better to sow flax broadcast, than in drills; since the plants in the latter case, by having too much lateral exposure, are apt to grow coarse and bushy, and consequently producing flax of inferior quality. If drilling be adopted, a mode which certainly affords greater facilities for weeding, the rows should not be placed more than 8 or 10 inches apart, so as not to allow the plants much room for lateral growth. Whichever mode is adopted—(broadcasting at present is better suited to Canada) care should be taken to cover the seed at a uniform depth, otherwise it will not germinate and the crop ripen at



the same time. This uniformity of depth can generally be better effected by the drill, than sowing broadcast. Cover the seed with a light brush harrow, say from half to three-quarters of an inch deep, and if the weather be dry, give a finish to the surface by rolling.

"Both in Ireland and in Belgium, clover seeds are frequently sown down with the flax, and in the latter country, carrots are also met with, sown in the same manner. This practice, though very commonly seen, even in well managed farms, is only admissible when both the land and the seed are perfectly clean, and free from weeds. Even then, it cannot be recommended, as the two crops thus sown together have to struggle for the food which ought, under ordinary circumstances, to be devoted to one; and as the flax has to complete its growth long before the other arrives at maturity, it must suffer the most; while the operation of harvesting the flax cannot be effected without injury to the crop left behind it in the soil. The only attention the crop requires after it has been well got in, is to be kept clear of weeds. This, when it has been drilled, is done by hoeing carefully by hand or the expanding horse-hoe; when broadcasted, however, it must be either left untouched, or carried out in a different manner. In the British Isles, it is generally left to take its chance. In Belgium, where manual labor is far more largely and commonly employed than with us in farm work, and where the extravagance of our weed-growing farmers is rarely to be seen, the operation of hand weeding is never omitted, and is effected in a manner peculiar to the crop. As soon as the plants have acquired a certain growth, and the weeds begin to show themselves, suitable weather, of course being selected for the work, children are sent on to the field for the purpose of clearing it of all surface weeds. The work is done by them on their knees, which are well padded, to prevent them from crushing or injuring the young and tender plants; a small basket, or bag suspended from the neck, receives the weeds, which are collected from time to time by the overlooker and carried off the field. As this operation can only be done once, it is important that it be done effectually, and every weed is by

these means removed from the field. Care and consideration are required as to the best time for the work, as if left too late, the plant is liable to be injured by the pressure of the weeder; the precaution, too, is always taken of working against the wind, in order to give the young plant the advantage that might arise from the action of the wind in assisting it to resume its erect position as quickly as possible."

*Pulling.*—Flax is a plant of rapid growth, and in about ten weeks, if the soil and season are favourable, it will commence flowering, giving to the field a very pretty appearance. In case the ground has been properly prepared, and a sufficiency of soil uniformly deposited, both as regards distance and depth, the stems will grow erect with a few flowers chiefly at the top, all the plants attaining much the same height. The flowers are soon followed by the "capsules," or "bolls," as they are more familiarly called, containing the seed, which when fully ripe, should appear plump, shining and heavy. It is a matter of nicety and of much importance to determine the precise time when flax should be pulled. All agree that the fibre is in the highest condition for manufacturing purposes before the seed becomes quite ripe, or rather as soon as the lower part of the stem has assumed a decidedly yellow hue, which will generally be the case soon after inflorescence, or when the seeds are beginning to change from a green to a pale brown colour. In this case it is obvious that only a small quantity of seed can be obtained, and that not fully ripened, but such seed will be useful as food for cattle. Indeed linseed, whether steeped, crushed, or in the shape of cake, after much of the oil has been expressed by pressure, constitutes one of the most valuable and healthful cattle foods which the farmer can command. It promotes alike the growth of fat and muscle, and when given in moderation with drier food, such as hay, grain, &c., admirably serves to keep the bowels in healthy action.

When both fibre and seed are desired, which will be the case more or less with most Canadian growers for some time to come, great attention is required, as much will depend upon the exercise of a sound judgment not only as regards the quantity, but also the quality of the crop.

"The seed-vessels or capsules are of a globular form, with the top surface slightly drawn up to a point. On opening them, from six to ten, (more commonly the latter number) cellular divisions are seen, each occupied by a seed, which at first is a colourless integument, enveloping a watery mucilaginous matter. On examination in a day or two, it will be found to have assumed a more solid consistence, and the seed to have changed to a pale green colour. This the first point to be noticed, and not a day should now pass without observing the changes that take place, as these changes form the criteria by which the period of harvesting the crop should be regulated."

In Belgium, where flax culture has long been practised with distinguished success, the mode of proceeding may be briefly stated as follows:—A full-grown plant is selected, and the best matured and ripest capsule is taken. This is cut across with a sharp knife, and the section of the seeds examined. If they have become firm inside, and the outside has assumed a good deep green colour, the plant is considered fit for immediate pulling. At this time the entire plant will exhibit signs of its approaching maturity, —the bottom of the stalk will be seen to have assumed a yellowish tint, and have become much harder to the touch than it was before, good indications of an interruption to the circulation of the juices of the plant. If this altered condition be allowed to go on by the plant remaining in the ground, the change of colour will rapidly make its way up the stem until it reaches the capsules, and then the seeds will be found to be fully matured, quite hard, and to have assumed the dark colour with which we are so familiar in the market samples. The next stage of the plant, would be the bursting of the seed vessels and dissection of their contents, and the decay of the entire plant; but to preserve both seed and fibre, the plant should be harvested at the earlier stage, at which time the fibre is at its best condition. If left until the seeds are quite matured, the stems get hard and woody, and the fibre is apt to get much broken in the subsequent process of separation. Long experience has proved that this is the most profitable time to pull the flax; for although the seeds at that time are not fully ripe, yet if allowed to remain in the sheaf, they will absorb

from their integument a quantity of sap to render them sufficiently mature for the purpose of vegetation, though perhaps for commercial purposes their market value may not be so high as if allowed to stand a little longer in the field.

In order to get the greatest length of fibre, which is a matter of great importance, flax, unlike all other cereal crops, is pulled up by the roots; an operation performed by hand, and unless the operator is accustomed to the work, it becomes tedious and expensive. "The flax is pulled, each hand singly grasping a small handful carefully by the neck, just below the seed-vessels, and drawing it up out of the soil, and laying it in rows across the other. These are allowed to remain lying open on the ground for a certain time, generally one or two days; they are then collected together, and bound into small-sized sheaves or bundles, care being taken that the band shall be placed just under the seed-heads of the plant, and the bottoms or butts left unconfined and open. If the crop has been irregular in its growth, and the stems are of unequal lengths, it is desirable, as far as it can be managed, to pull them in different bundles, according to their length, as both in steeping and scutching much fibre is otherwise lost. It is also desirable, in binding them, that the butts should be gently pressed on the ground, in order to regulate the length of the different stems. After the sheaves, or "bundles," as they are termed, are bound, they are arranged in small stooks, usually of four, five, or six each, placed in a circle, the butts being well spread out, so as to admit the air freely to their centres,—the weather, and the condition of the crop when pulled, of course regulating the period they have to remain on the field."

We have heard of a machine worked by horse-power, for pulling flax, in the western States, but no information as to its efficiency has come to our knowledge. In the case of level land and the surface left rolled down after the sowing, a good careful mower, with a scythe suitably equipped, might cut the flax close to the ground, so as to leave but little fibre behind. The cost of hand pulling is considerable, even in Europe, varying from 15s. to 25s., sterling, per acre, and in this country the cost will be higher, particularly where people are unaccustomed to the work. A more expeditious and cheaper



method of pulling the crop than is generally practised is an important desideratum, which modern mechanical ingenuity, it is hoped, will ere long supply. When the flax in the field formed into shocks is sufficiently harvested, it can be taken into the barn or sheds, or made into a rick sufficiently protected against the weather, till it is required for steeping and scutching.

(Concluded in next number.)

### Elgin Flax Association.

St. Thomas, C. W., March 10, 1862.

*To the Secretary of the Board of Agriculture.*

Sir,—The growing importance of Flax culture has induced the farmers and the land owners in this neighborhood to form an Association for promoting the culture of it, and I beg to enclose a newspaper report of the first meeting.

You will observe that it is not intended to engage directly in the practical culture of Flax, but the Association will devote its energies in supplying seed, machines and instruction to those intending to engage in the cultivation, and in procuring the improved machines for scutching and furnishing models or patterns to persons who would become purchasers from the grower.

It is the object of the Association to call into existence a class of Flaxmen the same as the "linier" of France, who will purchase the stalk or straw from the grower, and will then prepare it in a proper state to be sold to the spinner.

This district has long been known for its peculiar aptitude as regards soil in producing flax of fine quality and in good yield per acre, and it is so far fortunate for the cause that an association of this nature shall have been here organized.

Experienced hands in flax farming were the early settlers in this county, but beyond growing small patches for domestic use; no extent of culture has been engaged in, but if the farmers can find a market for the stalk or straw, it is ascertained that they will willingly give it a permanent place in their rotation as a crop.

The Association in its present state of infancy requires every assistance to carry out its purposes and if it is in the power of your Board to lend its aid by any grant or contribution of money or seed, or any other valuable influence which your matured existence commands, it will render no inconsiderable service to an agricultural enterprise of great importance to this locality.

I have, &c.,

B. WALKER,  
Secretary.

Subjoined is the Report of the meeting above referred:

### FLAX CULTURE.

A large and influential meeting of the Farmers and Agriculturists of the County of Elgin, was

held at Hutchinson's Hotel, in this town, on Saturday the 1st instant, to take into consideration measures for forming an Association for promoting and encouraging the culture of Flax in this county.

Samuel Eccles, Esq., was unanimously called to the chair, and Mr. Walker was appointed Secretary.

Amongst the gentlemen present were George Claris, James Armstrong, Stephen Wade, Thomas Williams, Dr. Geo. Southwick, Hugh McIntyre, E. M. Yarwood, William Lipsey, John Marlatt, Richard Nicol, William Parker, James Mitchell, John Black, John Lanning, P. Bobier, John Rae, James Vansickle, Jacob Miller, John McCully, and many others.

The Chairman, in opening the proceedings, said: That the importance of Flax culture was attracting great attention throughout the Province, and he thought that it was very desirable to bring the matter more closely to the notice of the farmers and land owners, by organizing an Association such as the one at present contemplated. He saw present a great number of gentlemen who had been flax growers in the old country, and should be glad to hear their opinion on the subject. He had derived a great deal of information from the *Canadian Agriculturist*, and also from the letters of Mr. Donaldson. He then read some very interesting extracts, showing the value and importance of flax culture. He also called the attention of the meeting to an improved machine for scutching flax, invented by Messrs. Rowan, of Belfast; and concluded by calling on the gentlemen present to express their views on the object of the meeting.

Mr. Stephen Wade next addressed the meeting, and stated that there could be no greater proof of the importance that was felt in the flax culture than by the large and influential assembly of gentlemen then met. He then moved the first resolution, seconded by Mr. Rae, of South Yarmouth, which was unanimously adopted.

*Resolved*, that the persons now present be the first members of an Association for the purpose of encouraging and promoting the culture of flax, to be called the "Elgin Flax Association," and do hereby constitute themselves an Association accordingly. And that all persons who shall hereafter subscribe and contribute towards the objects of the Association, be members thereof.

Mr. Rae, a practical and experienced flax farmer, produced some very fine samples of his own growing and preparing, and in a lengthened address, urged the value and importance of flax culture. He showed the greater profit to the farmer, than in the present crops of wheat and other grain. He also stated his intention of extending its culture in his rotation of crops.

The second resolution was moved by James Armstrong, Esq., seconded by John Lanning, Esq.:

*Resolved*, That the intentions and objects of the Association are: to promote the culture of

flax in the County of Elgin, First, by publishing information and instruction to those willing to engage in the culture.

Second, by procuring and distributing Seed.

Third, by procuring improved machinery for scutching, and furnishing patterns and models to parties who would become purchasers from flax growers.

Fourth, by other means which may appear desirable to the managing Committee to be now appointed.

The third resolution was moved by Wm. Parker, Esq., seconded by John Marlatt, Esq.

*Resolved*, That the Managing Committee be composed of Samuel Eccles, E. M. Yarwood, George. Ciaris, Stephen Wade, George Southwick, Thomas Williams, William Lipsey, John Rae, Jas. Mitchell, Richard B. Nicol, and Charles Roe, with power to add to their numbers, and with full powers.

The fourth resolution was moved by Jacob Miller, Esq., seconded by John McCully, Esq.

*Resolved*, That the means for carrying out the objects of the Association, be furnished by voluntary contributions and subscriptions; and that George Claris, Esq., be the Treasurer of the Association.

A subscription was then opened, and contributions in aid of the Association made, and the Company then separated.

### The Agricultural Statute.

The following draft of an Act, to be submitted to Parliament for adoption, in amendment of the Consolidated Statute, 22 Vic. Cap. 32, has been prepared by the Committee appointed by the Agricultural Convention, held in the city of Toronto on 30th January last, in accordance with the resolutions passed at that meeting. It will be observed that this draft refers to the Agricultural Societies of Upper Canada only.

AN ACT TO REPEAL CHAPTER THIRTY-TWO OF THE CONSOLIDATED STATUTES OF CANADA, AND OTHERWISE TO PROVIDE FOR THE ENCOURAGEMENT OF AGRICULTURE, ARTS AND MANUFACTURES.

Her Majesty, by and with the advice and consent of the Legislative Council and Assembly of Canada, enacts as follows:

I. The Bureau of Agriculture and all Agricultural Societies, Associations, and Boards of Agriculture lawfully organized or established shall continue to exist, except in so far as the said Bureau, or such Societies, Associations or Boards are altered or affected by this Act.

#### BUREAU OF AGRICULTURE.

II. The Bureau of Agriculture shall continue to be attached to one of the Public Depart-

ments, and the head of that Department shall be charged with the direction of the said Bureau, and shall in respect thereof be known as the Minister of Agriculture.

III. The said Minister shall be *ex-officio* Member of all the Boards of Agriculture at any time established in this Province.

IV. The said Minister shall also receive all applications, drawings, descriptions, specifications and models for or relating to Patents for Inventions in this Province, and shall keep the records thereof.

V. The said Minister shall also be President of the Board of Registration and Statistics, and shall, under the general direction of the said Board, have charge of the Census and other Statistical Returns.

VI. It shall be part of the duty of the said Minister to institute inquiries and collect useful facts and statistics relating to the Agricultural, Mechanical and Manufacturing interests of the Province, and to adopt measures for disseminating or publishing the same in such manner and form as he finds best adapted to promote improvement within the Province, and to encourage immigration from other countries; and he shall submit to Parliament, within ten days after the opening of each Session thereof, a detailed and succinct Report of his proceedings.

VII. All Boards of Agriculture, Agricultural Associations, Agricultural Societies, Horticultural Societies, Municipal Councils, Boards of Arts and Manufactures, Mechanics' Institutes, Public Institutions, and Public Officers in this Province shall promptly answer official communications from the said Bureau of Agriculture, and shall make diligent efforts to supply correct information on all questions submitted to them respectively;—And any officer of any such Board, Society, Council, Institute, or other public Institution, refusing or wilfully neglecting to answer any question, or to furnish any information relating to the Agricultural, Mechanical or Manufacturing interests, or to the Statistics of this Province, whenever required so to do, either by the said Minister, or by any person duly authorised by him in that behalf, shall for every such offence incur a penalty of forty dollars, which shall be recoverable by any person suing for the same before any court of competent jurisdiction, and shall be paid to Her Majesty.

VIII. The Minister of Agriculture may, at any time, and from time to time, appoint any person or persons to inspect the books and accounts of any Society in the Province receiving Government aid, and being in any way in connection with the Bureau of Agriculture;—And all officers of every such Society, whenever required so to do, shall submit such books and accounts to such inspection, and truly to the best of their knowledge answer all questions put to them in relation thereto or to the funds of such Society.



IX. Out of the whole amount voted for the encouragement of Agriculture in Upper Canada, two and a half per cent thereof may be appropriated and devoted to the promotion of Agricultural instruction and information by the Board of Agriculture in that Section of the Province.

2. The Board of Agriculture may in its Reports to the Government indicate in what manner this sum should be employed;

3. Of the amount granted for the encouragement of Agriculture, ten per cent. in Upper Canada shall be placed at the disposal and in the hands of the Board of Agriculture for the purpose indicated by law.

#### BOARDS OF AGRICULTURE.

##### *Members and Officers.*

X. The Presidents and Vice-Presidents for the time being, of the Agricultural Associations hereinafter mentioned, and all Professors of Agriculture in Chartered Colleges, Universities, and other Public Educational Institutions, and the Chief Superintendents of Education in Upper and in Lower Canada, shall respectively be members *ex-officio* of the Board of Agriculture for that section of the Province in which they reside.

XI. Six members of each Board shall retire annually, and cease to be members thereof, unless re-elected, each seat being vacated every alternate year; but retiring members may continue to exercise all their functions until their successors have been duly elected, as hereinafter provided; and the names of the retiring members shall be published in the Agricultural Journals of the section of the Province in which they reside, or in such other public newspapers as the Minister of Agriculture may direct.

XII. The several County Societies in Upper Canada, shall, at their Annual Meeting, as hereinafter provided, each name two persons to act as delegates, who shall, at the meeting of the Provincial Association, at its Annual Exhibition, have each a voice in the election of members of the Board of Agriculture, and the election of such members shall take place on the evening of Thursday, in the first week of the exhibition.

XIII. The first election shall take place at the Annual Meeting of the Provincial Agricultural Association in one thousand eight hundred and sixty-two, and the six persons so elected shall replace the four members then next retiring from the said Board respectively; the next election shall take place at the Annual Meeting in one thousand eight hundred and sixty-three, to replace the remaining four members, whose term of service will then next expire.

XIV. Neither of the said Boards shall pay or allow any sum to a member thereof, for acting as such member, except the amount of his actual necessary expenses in attending the regular meetings of the Board; but each of the said Boards may appoint a Secretary and Treasurer

from among its members or otherwise, and may pay a reasonable salary for such services. The Treasurer shall give such sureties as the Board may require.

#### MEETINGS AND FUNCTIONS OF THE BOARD.

XV. The regular meetings of the said Boards shall be held pursuant to adjournment, or be called by the Secretary at the instance of the President or Vice-President, or upon the written request of any three members; and at least five days' notice of such meeting shall be given to each member:

2. The members of each of the Boards of Agriculture shall elect from among themselves a President and Vice-President at their first meeting after each annual election;

3. In the absence of the President and Vice-President, the Board may appoint a Chairman *pro tempore*;

4. Five members of the Board shall be a *quorum*.

XVI. It shall be the duty of the said Boards respectively:

1. To receive the Reports of Agricultural Societies, and before granting the certificates hereinafter mentioned, to see that they have complied with the law;

2. To take measures, with the approbation of the Minister of Agriculture, to procure and set in operation a model, illustrative or experimental farm or farms in their respective sections of the province, and in connexion with any public school, college or university, or otherwise, and to manage and conduct the same;

3. To collect and establish, at Toronto and Montreal respectively, an Agricultural Museum and an Agricultural and Horticultural Library;

4. To take measures to obtain from other countries animals of new and improved breeds, new varieties of grain, seeds, vegetables, or other agricultural productions, new or improved implements of husbandry or new machines which may appear adapted to facilitate agricultural operations, and to test the quality and usefulness of such animals, grain, seeds, vegetables or other productions, implements or machines;

5. The Boards of Agriculture may pass by-laws and adopt measures to allow persons desirous of practising as veterinary surgeons to undergo an examination; and upon proof to the satisfaction of the Board that they possess the requisite qualifications, may grant certificates of capacity to practise as veterinary surgeons to such persons.

XVII. The said Boards shall keep a record of their respective transactions, and shall, from time to time, publish, in such manner and form as to secure the widest circulation among the Agricultural Societies and farmers generally, all such Reports, Essays, Lectures, and other useful information as the said Boards respectively may procure and adjudge suitable for publication;

2. And if the said Boards, or either of them publish a monthly Journal, or adopt as their channel of communication with Agricultural Societies, the Agricultural Journals now published in Upper and Lower Canada respectively, then all Agricultural Societies receiving any share of the Public Grant shall give, at least, one month's notice of the time and place of holding their exhibitions in the Journals so published or adopted by the said Boards respectively.

XVIII. The said Boards shall transmit to the Bureau of Agriculture a copy of their resolutions, By-laws or other formal proceedings, immediately after the adoption thereof, and at the commencement of each year a detailed statement of receipts and disbursements, and a full statement of all property and securities held, made up to the thirty-first December of the previous year.

XIX. Each of the said Boards shall continue to be a body corporate, and may acquire and hold land and personal property for the purposes of its incorporation, and may sell, lease, or otherwise dispose of the same.

#### BOARDS OF ARTS AND MANUFACTURES.

##### *Members and Officers.*

XX. There shall be, in and for Upper Canada, a Corporation, composed as hereinafter provided, and called "The Board of Arts and Manufactures for Upper Canada."

XXI. There shall be, in and for Lower Canada, a Corporation, composed as hereinafter provided, and called "The Board of Arts and Manufactures for Lower Canada."

XXII. Each of the said Corporations may acquire or hold real or immovable property for the purposes of the Corporation, and may sell, exchange, lease, or otherwise dispose of or depart with the same from time to time; but no property shall be sold or otherwise alienated unless by authority of the Board, granted for that purpose, at a meeting held after special notice shall have been given of the business to be transacted, and by a vote of at least two-thirds of the members present at such meeting.

XXIII. The said Corporations shall respectively be composed of the Minister of Agriculture for the time being (who shall be *ex officio* a member of each); the Professors and Lecturers in the various branches of Physical Science in the Chartered Universities, and Colleges affiliated with Universities, in Upper and Lower Canada respectively; the Chief Superintendents of Education in Upper and Lower Canada respectively, for the time being, *ex officio*; the principal or staff officers of the Principal or Geological Survey in that section of the Province in which they may be respectively residents; the President for the time being of, and one delegate from each of the incorporated Boards of Trade; and the President of, and delegates from each Mechanics' Institute, or of any incorporated Arts Association, qualified as hereinafter mentioned, in Upper and Lower

Canada respectively—such delegates to be chosen annually as hereafter provided; and the Faculty of any institution of learning, of Collegiate rank, composed of at least five Professors or Lecturers—one of whom shall be a professor or lecturer upon Physical Science,—may, in the month of December in each year, elect one of such professors or lecturers to represent such College or Faculty upon such Board, and the President or Principal of such College or Faculty shall certify to the Board the name of the Professor or Lecturer so appointed.

XXIV. The incorporated Boards of Trade in each City and Town in Upper Canada respectively, shall at its last general meeting in each year, or at any special meeting held in the month of December, elect and accredit to the Board of Arts and Manufactures for Upper and Lower Canada, (according as its place of meeting is in Upper or Lower Canada) one of its body as a member thereof.

XXV. Each incorporated Mechanics' Institute in Upper or Lower Canada respectively shall, at its last general meeting in each year, or at any special meeting held in the month of December, elect and accredit to the Board of Arts and Manufactures in Upper or Lower Canada, one delegate for every twenty members on its roll, being actual working mechanics or manufacturers, and paying an annual subscription of at least one dollar each to its funds.

2. Each incorporated Arts Association in Upper or Lower Canada respectively, expending not less than one half of its annual income in the promotion of the Fine or Industrial Arts in Canada, shall, at its last meeting in each year, or at any special meeting held in the month of December, elect and accredit to the Board of Arts and Manufactures in Upper or Lower Canada, one delegate for every thirty members on its roll, who are paying an annual subscription of at least two dollars each to its funds.

3. But no Institution or Association shall be entitled to send more than fifteen delegates to either of the said Boards; and in case a vacancy occurs in the representation of any Mechanics' Institute, Board of Trade, or Arts Association, entitled to send delegates to either of the said Boards, such Institute, Board, or Association may, at its first meeting thereafter, elect a delegate or delegates to fill such vacancy.

XXVI. The names of the delegates elected, together with the names of the Presidents of such Mechanics' Institutes, Boards of Trade and Arts Associations, as aforesaid, shall be forthwith transmitted by the Secretary of the Institute, Board or Association electing them, to the Secretary of the Board to which they are elected, who shall thereupon inscribe their names upon the roll of the members of the said Board, for the year about to commence.

2. With the names of the delegates when transmitted by the Secretary of a Mechanics' Institute or Arts Association, there shall be



transmitted a statement, under the corporate seal of such Institute or Association, and verified by the written declaration of the Secretary transmitting the same, of the names of all the members on the roll of such Mechanics' Institute who are working mechanics or manufacturers, and are paying an annual subscription of at least one dollar each to the funds of such Institute; and the names of all the members on the roll of each Arts Association, who are paying an annual subscription of at least two dollars each to the funds of such Association.

3. If it appears by the said statement that any Mechanics' Institute or Arts Association has elected too many delegates, then the Secretary of the Board shall abstain from recording any of the names of the delegates of such Institute or Association, and shall submit the matter to the Board at its first meeting; and the said Board may, if they see fit, adjudge that such Mechanics' Institute or Arts Association shall not be entitled to any delegate for the year then next ensuing, or may decide by vote or ballot which delegate or delegates shall be rejected, and in this latter case the names of the remaining delegate or delegates shall be forthwith inscribed on the roll of members.

4. The wilful making of any false statement or declaration required or authorised by this Act shall be a misdemeanor, punishable by fine, in the discretion of the Court.

#### MEETINGS AND FUNCTIONS OF THE BOARD.

XXVII. The said Boards of Arts and Manufactures shall meet at the Cities of Toronto and Montreal respectively, twice in every year, that is to say, on the last Tuesday in the month of January and July, if such Tuesday be not a holiday, but if it be a holiday the meeting shall take place the next day thereafter, not being a holiday.

2. And the President of either of the said Boards, and, in his absence from the Province, or in case of a vacancy in the office of President, then the Vice-President, whenever he deems it necessary or is required by any ten members thereof so to do, shall call a special meeting of the same, in the interval between any two meetings.

3. But no such special meeting shall take place until seven clear days after a written or printed notice signed by the Secretary of the Board, and specifying the day, hour and place of meeting, and the object or objects for which the same is called, has been mailed to the address of each enrolled member of the Board.

XXVIII.—Each of the said Boards shall, at its regular meeting in January in each year, elect from among its members a President, Vice-President, and a Secretary and Treasurer, to hold office for the ensuing year, or until the election of their successors; and shall also elect a Council of not less than five nor more than nine

of their number for the management during the year, of such affairs of the Board as may by any by-law be entrusted to them.

2. The President and Vice-President shall be *ex officio* members of such Council, and the Secretary and Treasurer shall be *ex officio* a member of such Council, when elected or appointed from among the members of the Board, and not receiving any salary for such services; and a majority of the members of such council shall be a quorum for the transaction of business.

3. But the said Boards, or either of them, may at any time they shall see fit so to do by a by-law for that purpose, appoint some fit and proper person whether a member of such Board or not, to be the Secretary of said Board, at such salary and upon such terms as to the said Boards, or either of them may seem proper, and may remove such Secretary from time to time, and may appoint another in his stead and place; and the said Boards or either of them, may in their discretion require the said Secretary, so to be appointed as aforesaid, to discharge the duties of Treasurer for the said Board, in addition to the duties pertaining to the office of Secretary.

4. In case of a vacancy occurring in any of the said offices in the course of the year, either by death, resignation or otherwise, such vacancy shall be filled up by election as aforesaid at any regular meeting of the Board, or, in the interval, by the Council at any regular meeting thereof.

XXIX.—It shall be the duty of the said Boards of Arts and Manufactures:—

1. To take measures, with the approbation of the Minister of Agriculture, to collect and establish at Toronto and Montreal respectively, for the instruction of practical mechanics and artisans, Museums of Minerals, and Material substances, and Chemical compositions, susceptible of being used in Arts and Manufactures, with Model rooms, appropriately stocked and supplied with models of works of art, and of implements and machines other than implements of husbandry and machines adapted to facilitate agricultural operations; and also free Libraries of Reference containing Books, Plans and Drawings, selected with a view to the imparting of useful information in connection with Arts and Manufactures.

2. To take measures to obtain from other countries new or improved implements and machines; (not being implements of husbandry or machines specially adapted to facilitate agricultural operations) to test the quality, value and usefulness of such implements and machines.

3. And generally to adopt every means in their power to promote improvement in the Arts and Manufactures of the Province.

XXX.—The said Boards, with the consent and approbation of the Minister of Agriculture, may establish in connection with their respective Museums, Model Rooms and Libraries, and Schools of Design, on the most approved plane,

and furnished and supplied in the most complet, and appropriate manner that the funds at their disposal will admit of, regard being had to the claims thereon of the other objects for which they are hereby established.

2. And the Minister of Agriculture may cause duplicates or copies of models, plans, specimens, and drawings, and specifications, deposited in the Patent office, and upon which Patents of Invention have been issued, to be made from time to time, and placed in the Model Rooms, Museums or Libraries of the said Boards of Arts respectively.

3. The said Boards may also found Schools or Colleges for mechanics and artizans, and may employ competent persons to deliver Lectures on subjects connected with the Arts and Sciences, or with Manufactures, in such manner and place as the said Boards may from time to time direct.

XXXI.—The said Boards shall keep records of their respective transactions, and shall from time to time publish in such manner and form as to secure the widest circulation among the Mechanics' Institutes, and among mechanics, artizans, and manufacturers generally, all such Reports, Essays, Lectures and other literary compositions conveying useful information as the said Boards are respectively able to procure.

XXXII.—The said Boards respectively may make and ordain such By-laws, Rules, Orders and Regulations, not being contrary to this Act or to the laws of the Province, as they may deem necessary, touching the disposition and management of their funds, property and affairs; the holding and management of exhibitions of Works of Art and Manufactures, and the execution of the duties and the powers entrusted to them by this Act; and from time to time may repeal or alter the same and make others in their stead.

2. Copies of all By-laws, Rules, Orders and Regulations, and of the minutes of the proceedings of the said Boards, shall be transmitted forthwith after they are respectively made to the Bureau of Agriculture.

XXXIII.—All Mechanics' Institutes and Arts Associations receiving grants of money from the Government, shall be placed under the general supervision of the Boards of Arts and Manufactures for Upper and Lower Canada respectively, in like manner as the County Agricultural Societies are placed under the supervision of the Boards of Agriculture; and the said Boards shall receive from the Government, and pay over to the respective Mechanics' Institutes and Arts Associations any grants of money to which they may be entitled.

2. And it shall be lawful for each Board to retain for the use of its periodical Exhibitions, one tenth part of all such grants; and no Mechanics' Institute or Arts Association in Upper or Lower Canada shall be entitled to receive any grant of money from the Government, unless such Institute or Association has become incor-

porated under the general "Act respecting Library Associations and Mechanics' Institutes," chapter 72 of the Consolidated Statutes of Canada, or by special Act of Incorporation; nor unless such Institute or Association shall have transmitted to the Board of Arts and Manufactures for Upper or Lower Canada, a properly certified copy of its Annual Report for the past year.

3. And it shall be the duty of the respective Boards of Arts and Manufactures to send Agents to visit each incorporated Mechanic's Institute and Arts Association in Upper Canada respectively, whose duty it shall be to ascertain and report on the progress each Institute or Association is making in carrying out the objects for which the grants from the Government are made; and no Association or Institute shall be called a Mechanics' Institute within the meaning and provisions of this Act, unless it shall have at least twenty members enrolled as working mechanics or manufacturers, who are paying a subscription of at least one dollar each per annum to its funds.

#### AGRICULTURAL ASSOCIATIONS.

XXXIV.—The members of the Boards of Agriculture and of the Boards of Arts and Manufactures; the Presidents and Vice-Presidents of all lawfully organized County Agricultural Societies, and of all Horticultural Societies, Incorporated Mechanics' Institutes and Arts Associations, and all subscribers of one dollar annually, shall, in their respective sections of the Province, be, and constitute an Agricultural Association" for that section.

XXXV.—The Members of the Board of Agriculture and the Council of the Board of Arts Manufactures, and the Presidents and Vice Presidents of County Societies, Mechanics' Institutes, Arts Associations and Horticultural Societies, (or any two members whom a County Society, Mechanics' Institute, Arts Association or Horticultural Society may appoint instead of its President and Vice President) shall be the Directors of such Agricultural Association.

XXXVI.—The said Associations may each hold an annual or biennial Fair or Exhibition, which shall be open to competitors from any part of the Province.

3. The Directors shall hold a Meeting during the week of the Exhibition, and shall at such meeting elect a President and two Vice-Presidents, and shall also elect a Treasurer, who shall be paid a reasonable salary for his services; and shall appoint the place for holding the next meeting and Exhibition of the Association, and may appoint a local Committee of Management at the place where such Exhibition is appointed to be held.

4. And the said Boards of Directors respectively, may make such rules and regulations, not being contrary to the laws of the Province, as may be deemed necessary to prescribe the powers and duties of such local committees, and for the



proper management of such exhibitions; and for the disposition and management of their funds, property and affairs, and the execution of the duties and powers entrusted to them by this act; and the same from time to time to repeal or alter and make others in their stead.

5. But no repeal or alteration shall be made in any rule or regulation, unless one month's notice of such proposed repeal or alteration shall have been given in any Journals that may at the time be published by the respective Boards of Agriculture and Boards of Arts and Manufactures.

XXXVII.—The Board of Agriculture, and the President and Vice President of the Board of Arts and Manufactures, and one other member of the Council of said Board, to be elected annually by said Council, shall be the Council of the Association, with full power to act for and on behalf of the Association between the annual meetings thereof; and all grants of money, subscriptions, or other funds made or appropriated to, or for the use of the Association, (except money collected by or granted to any local committee for the local expenses of an Exhibition,) shall be received by and expended under the direction of the said Council.

2. And the President of the Board of Agriculture, and the President of the Board of Arts and Manufactures, shall be respectively *ex officio* President and Vice President of the Council of the Association, and the Secretary of the Board of Agriculture, together with the Secretary of the Board of Arts and Manufactures, shall be *ex-officio* joint Secretaries of the Association.

XXXVIII.—All contracts and all legal proceedings, by, with, or concerning the Association, shall be made and had with the Council of the Association in its corporate capacity, and no other contracts, agreements, actions or proceedings shall bind or affect the Association.

XXXIX.—The Council of the Association shall have power to grant licences to parties to sell refreshments upon the premises enclosed for the exhibition.

#### HORTICULTURAL SOCIETIES.

XL. Any number of persons, not less than twenty-five, may organise and form themselves into a Horticultural Society for any City, Town, Village, Township or Parish, or Union of two or more thereof together, either in Upper or Lower Canada, by signing a declaration in the form of Schedule A to this Act annexed, (but with the necessary alteration as to the name of the Society,) and subscribing a sum of not less than forty dollars annually to the funds thereof.

XLI. Such declaration shall be in duplicate, and one part thereof shall be written, and signed on the first page or pages of a book to be kept by the Society for recording the minutes of its proceedings during the first year of its existence, and the other part thereof shall be written and signed on a sheet of paper or parchment, and shall forthwith be sent by Post to the Minister of Agriculture, who shall, as soon as may

be after the receipt thereof, cause a notice of the formation of such Society to be inserted in the *Canada Gazette*.

XLII. Upon the insertion in the *Canada Gazette* of the notice of the formation of any such Society, it shall become a Corporation for the objects and purposes hereinafter mentioned, by the name applied to it in such notice, which shall be the same as that in the declaration transmitted by such Society, and may acquire and hold, lease and mortgage and alienate property, real and personal, for the purposes of such Society.

XLIII. Every Horticultural Society incorporated under this Act may make By-laws, not being contrary to the laws of this Province or to this Act, for prescribing the mode of admission of new Members and election of Officers, and otherwise regulating the administration of its affairs and property.

XLIV. Every such Society shall hold a meeting in the first week of the month of February, in each year, besides meetings at such other times as may be prescribed or provided for by its By-laws; and at such annual meeting a President, who shall also be a Director, a Secretary and Treasurer, and not fewer than three nor more than nine other Directors shall be elected.

XLV. The said Directors shall prepare and present to the annual meeting of the Society a report of their proceedings during the year, in the same manner as herein directed for County Agricultural Societies, and containing information under the same heads, save and except those which relate to Agriculture,—the object and purposes of Horticultural Societies being the same as those of Agricultural Societies, as hereinafter mentioned, but with reference to Horticulture only, and the said report shall be transmitted to the Secretary of the Board of Agriculture for that section of the Province in which the Society is situated, on or before the first day of April in each year.

XLVI. "Every Horticultural Society in any city, town, or incorporated village, incorporated under this act, or which may have been incorporated under any other act of the Provincial Legislature, shall be entitled to a public grant, equal to the amount subscribed by the members of such society and certified by their Treasurer to have been paid into his hands in the manner provided by the section of the act relating to Agricultural Societies, provided that the whole amount granted to any such society shall not exceed £100 in any year."

#### AGRICULTURAL SOCIETIES IN UPPER CANADA.

##### *County or Electoral Division Societies.*

XLVII. An Agricultural Society may be organized in each of the Electoral Divisions of Upper Canada for the purposes of Representation in the Legislative Assembly, in which there was not one embracing the limits of such Electoral Division already organized on the tenth day of June, one thousand eight hundred and fifty-seven,

Whenever fifty persons have become Members thereof by signing a declaration in the form of the Schedule A to this Act annexed, and paying each not less than one dollar annually to the Funds of the said Society; and a true copy of the said Declaration shall, within one month after the money has been so paid, be transmitted to the Board of Agriculture.

XLVIII. The object of the said Societies, and of the Township or branch Societies in connection therewith, shall be to encourage improvement in Agriculture or Horticulture, or both:—

1. By holding Meetings for discussion, and for hearing Lectures on subjects connected with the theory and practice of improved Husbandry;

2. By promoting the circulation of the Agricultural Periodicals published in the Province;

3. By importing or otherwise procuring Seeds, Plants and animals of new and valuable kinds;

4. By offering prizes for Essays on Questions of Scientific Enquiry relating to Agriculture or Horticulture, Manufactures and Works of Art;

5. And by awarding Premiums for excellence in the raising or introduction of Stock, the invention or improvement of Agricultural or Horticultural Implements and Machines, the production of grain and of all kinds of vegetables, plants, flowers and fruits, and generally for excellence in any Agricultural or Horticultural Production or Operation, Article of Manufacture or Work of Art;

6. The Funds of the Societies, derived from subscriptions of Members, or the Public Grant, shall not be expended for any object inconsistent with those above mentioned;

7. And the Directors of every such County Society, at any meeting, called by written notice as hereinafter mentioned, and in which notice the object of the meeting has been specified, may make, alter and repeal By-laws and Rules for the regulation of such Society and the carrying out of its objects.

XLIX. The first Meeting for the formation of a County Agricultural Society in Upper Canada under this Act, shall be called by the Warden of the County or Union of Counties in the third week of January in each year, at which Meeting the Election of the various Officers shall take place, and the Society so organized shall be deemed the County or Electoral Division Society and shall be entitled to receive the Provincial Grant hereinafter provided; and all subsequent Annual Meetings after the first Meeting shall be called and held as provided in the next following section of this Act.

L. The said Societies shall hold their Annual Meetings in the third week of the month of January in each year, and shall at such meeting elect a President, two Vice Presidents, a Secretary and Treasurer, and not more than seven Directors.

LI. The Presidents of the several Township Agricultural Societies, within the County or Electoral Division, shall, in addition to those before named, be *ex officio* Directors of the County Society, provided that each such Township society shall have upon its list of members at least ten persons who are also members of the County Society, and paying not less than one dollar each, or that such Society shall otherwise have contributed ten dollars annually to the funds of the County Society; and the said officers and Directors shall, for the year next following the annual meeting, and until the election of their successors, exercise all the powers invested in the County Society by this Act.

LII. The Meetings of the Officers and Directors shall be held pursuant to adjournment, or called by written notice given by authority of the President, or in his absence, the Senior Vice-President, at least one week before the day appointed; and at any meeting five shall be a quorum.

LIII. The said Officers and Directors shall, in addition to the ordinary duties of management, cause to be prepared, and shall present at the Annual Meeting, a Report of their proceedings during the year, in which shall be stated the names of all the Members of the Society, the amount paid by each being set opposite his name, the names of all persons to whom premiums were awarded, the amount of such premiums respectively, and the name of the animal, article or thing, in respect of which the same was granted, together with such remarks and suggestions upon the Agriculture and Horticulture of the County, and Arts and Manufactures therein, as the Directors are enabled to offer;

2. There shall also be presented to the said Annual Meeting, a detailed statement of the receipts and disbursements of the Society during the year;

3. The said Report and statement, if approved by the meeting, shall be entered in the Society's Journal, to be kept for such purposes, and signed by the President, or a Vice-President, as being a correct entry, and a true copy thereof, certified by the President or Secretary, for the time being, shall be sent to the Board of Agriculture, on or before the first day of April next following.

LIV. The County Society shall receive the Reports of the Township or Branch Societies, and shall transmit them to the Board of Agriculture, with such remarks thereon, as will enable the said Board to obtain a correct knowledge of the progress of agricultural improvement in the County or Electoral Division.

LV. The said Officers and Directors shall answer such queries and give such information, as the Board of Agriculture, or Minister of Agriculture, may, from time to time, by Circular Letter, or otherwise, require, touching the interests or condition of Agriculture in their



County or Electoral Division, and generally shall act as far as practicable upon the recommendations of the Board.

### *Township Societies.*

LVI. A Township or Branch Agricultural Society may be organized in each Township in Upper Canada, in which there was not one already organized on the tenth day of June, one thousand eight hundred and fifty-seven, or in any two or more such Townships together, whenever a sufficient number of persons, not less than twenty-five, become Members, by signing a declaration in the form of Schedule A, to this Act annexed, and subscribing a sum not less than forty dollars annually, to the funds thereof; and a true copy of the said Declaration, certified by the President or Vice-President of such Society, shall be forthwith transmitted to the County Society.

LVII. The said Societies shall hold their Annual Meeting on the second Thursday of the month of January in each year, and shall elect a President, Vice-President, Secretary and Treasurer, and not fewer than three, nor more than nine Directors.

2. In the event of the Secretary or Treasurer dying or resigning office during the term for which he has been elected, it shall be the duty of the Directors and they are hereby empowered to nominate and appoint a fit and proper person to fill the office for the unexpired term of the person so dying or resigning as aforesaid.

LVIII. The said Officers and Directors shall prepare and present to the Annual Meeting of the Society, a Report of their proceedings during the year, in the same manner as hereinbefore directed for County Societies, and containing information under the same heads, and shall transmit a true copy thereof, certified by the President or Vice-President, to the Secretary of the County Society, in time for the Annual Meeting thereof in the month of January.

### GENERAL PROVISIONS RELATIVE TO AGRICULTURAL SOCIETIES IN UPPER CANADA.

LIX. The Exhibition of the County Society shall be held wherever the majority of the Directors, or of a quorum thereof think fit, giving due and public notice thereof:

2. And two or more County and Township Societies may, by agreement between the Directors thereof, or a majority of Directors of each such Society, unite their Funds, or any portion thereof, for the erection of suitable buildings in which to exhibit Articles of Produce or Manufacture or Work of Art, or for Annual or Extra Shows, or for Ploughing Matches, or for any other purpose likely to promote the welfare of any one or more Counties or Townships, in Agriculture, Horticulture, Arts or Manufactures, and may acquire, by purchase or lease, and hold sufficient land for this purpose, from time to time, and may exchange or sell the same.

LX. Whenever the President and Secretary of the Board of Agriculture, certify to the Minister of Agriculture, that any County Society has sent to the said Board, Reports and Statements, as required by this Act, for the year then last previous, and also certify that the Treasurer or other officer of the said Society has, on or before the first day of July, of the current year, transmitted to the said Board, an Affidavit, (which may be in the form of the Schedule B, to this Act annexed, and may be sworn to before any Justice of the Peace,) stating the amount subscribed for that year, and paid to the Treasurer of the County Society by the members thereof, and by the several Township Societies of said County, the Governor may issue his Warrant in favour of such County Society, for a sum to be paid out of any unappropriated moneys in the hands of the Receiver General, equal to three times the amount appearing by the said affidavit to be in the hands of the Treasurer:

2. But no grant shall be made unless one hundred dollars be first subscribed and paid to the Treasurer:

3. And the whole amount granted to any such Electoral Division Society shall not exceed eight hundred dollars in any year;

4. Except that each of the Counties of Lennox and Addington, Huron and Bruce, separately, shall be entitled to receive a sum not to exceed eight hundred dollars, on the conditions specified in this Act, and that the Counties of Prince Edward, Welland, Haldimand, Grey, Halton, Kent, Carleton, Essex, Lambton, Lincoln, Norfolk, Peel and Perth, shall each be entitled to receive as heretofore a sum not exceeding one thousand dollars in any year, and on the conditions aforesaid.

LXI. The City of Toronto,—the City of Kingston,—the City of Hamilton,—the Town of Breckville,—the Town of Niagara,—the Town of Cornwall,—the City of London,—and the City of Ottawa, as bounded for purposes of Representation in the Legislative Assembly,—shall each be entitled to receive a sum not exceeding four hundred dollars for the encouragement of Horticulture, Agriculture, Manufactures, and Works of Art within their respective limits:

2. Provided, that a sum equal to one third of the amount to be so paid by the Government, is subscribed and paid to the Treasurer of a Society to be formed within such Electoral Division, in the same manner as County Agricultural Societies under section forty-seven of this Act, and to be called "The Society for the Upper Canada Electoral Division of \_\_\_\_\_," or as the case may be.

LXII. Every Township or Branch Society organized according to the Act sixteenth Victoria, chapter eleven, or to this Act, and sending a report of its proceedings to the County Society, as hereinbefore required, shall be entitled to a share of the grant to the County Society, in pro-

portion to the amount subscribed by the members of such Township or Branch Society, and deposited with the Treasurer of the County Society, on or before the first day of May in each year, as compared with the amounts so deposited by the other Township and Branch Societies of the County; and the sum so deposited by any Township or Branch Society shall be repaid, along with its share of the Public Grant, so soon as the said grant is received by the County Society:

2. Provided that three-fifths and no more of the sum so received by any County Society shall be subject to division among Township or Branch Societies; and provided that the declaration mentioned in section fifty-six shall be deemed a sufficient report for the first year in which any Township or Branch Society has been organized, and that no Township or Branch Society shall thus receive more than three times the amount so deposited by it as aforesaid;

3. And provided that nothing in this Act contained shall be construed as admitting any member of a Township Society, in virtue of his subscription thereto, and without further subscription to the County Society, to any of the privileges of a member of such County Society.

LXIII. The Board of Agriculture shall receive from Government, and pay over to the County Societies, the Public Grants, to which they are respectively entitled, and the said Board may retain for the use of the Agricultural Association, one tenth part of all such grants.

LXIV. Any Treasurer or other officer of any County, Township or Branch Society, who makes affidavit that a subscription, or any sum of money, has been paid to him for the Society, when it has not been so paid, or who returns any such subscription, shall forfeit and pay to Her Majesty the sum of forty dollars for every such offence, and shall be guilty of perjury and be held liable to all the penalties with which the law visits that crime.

LXV. The several County Societies organized according to the provisions of this Act, or of the said Act sixteenth Victoria, chapter eleven, or of any Act thereby repealed, shall be and continue Bodies Corporate, with power to acquire and hold land as a site for Fairs and Exhibitions, or for a School Farm, and to sell lease, or otherwise dispose of the same; And, any Township or Branch Society, lawfully organized as aforesaid, may, at any Regular Meeting, adopt a Resolution that the said Society is desirous of being incorporated, and upon filing the said resolution with the Secretary of the Board of Agriculture, such Society shall thenceforth be and become a Body Corporate, and shall have like powers with County Societies.

LXVI. Any County or Township Society, or the Municipal Council of any County or Township of Upper Canada, may purchase and hold land for the purpose of Establishing a School-

Farm to instruct pupils in the Science and practice of Agriculture; And any Society and any Municipal Council may purchase and hold such School-Farm conjointly or otherwise, and make all necessary rules and regulations for the management thereof; provided that not more than one hundred acres of land shall be so held by any Society or Council, whether conjointly or otherwise.

LXVII. Whenever any property, real or personal, in any one or more of the Electoral Divisions, originally belonged to the County Society of the County of which the said Electoral Division formed a part, the said property or the value thereof shall be equitably apportioned or divided by Arbitrators or a majority of them, one to be appointed by the Directors of the Society in each such Electoral Division, and another Arbitrator to be chosen by the Arbitrators so appointed.

LXVIII. The word "County" in the sections of this Act applying to Agricultural Societies in Upper Canada, means "Electoral Division," except where such construction is inconsistent with the express enactment in which such word is used; And the words "Electoral Division," whenever used herein, mean a Division for purposes of representation in the Legislative Assembly:

2. And the provisions of the said sections with regard to grants and Electoral Divisions, conditions of grant, &c., &c., shall extend to any new Counties or new Electoral Divisions to be formed in Upper Canada; except that no new Electoral Division shall be entitled to more than eight hundred dollars.

#### MUNICIPAL AID TO AGRICULTURAL SOCIETIES IN UPPER AND LOWER CANADA.

LXIX.—The Municipality of any City, Town, Village, County or Township in this Province, may grant money or land in aid of the Agricultural Association for that section of the Province to which the Municipality belongs, or of any Agricultural or Horticultural Society whatever duly organized under this Act, within the limits of such Municipality.

#### SCHEDULE A.

We whose names are subscribed hereto, agree to form ourselves into a Society, under the provisions of the *Act for the encouragement of Agriculture, Arts and Manufactures*, to be called the (County, Electoral Division, Township or Branch *as the case may be*,) Agricultural Society of the County (or Electoral Division) of (or Township of ) ; and we hereby severally agree to pay to the Treasurer yearly, while we continue Members of the Society, (any Member being at liberty to retire therefrom, upon giving notice to the Secretary, at any time before the annual meeting, of his



| NAMES. | \$ | cts. |
|--------|----|------|
|        |    |      |

COUNTY OF  
TO WIT:

Sworn to before me this                      }  
day of                      A. D. 18   .   }

A. B.

Justice of the Peace for the  
County of

The following interesting paper from a recent number of the *Mark Lane Express*, will afford many useful suggestions to our readers. The circular of the Wool Supply Association, with specimens of different kinds, was received by our Board of Agriculture, and some notices thereof will be found in our last volume. We are of opinion that with perseverance and sound judgment a great deal more in the production of the longer sorts of wool may be done in Canada than is generally imagined.—ED.]

increased demand for long wool by the worsted trade, which has led the manufacturers and Bradford Chamber of Commerce to enter into direct communication with the several wool-producing countries, in order to stimulate greater exertion in the production of that class of wool. Our observations were then directed specially to the Cape wools and to the temper in which the suggestions had been received by the Cape flockmasters. But the whole subject has a far wider range of application than one colonial district, since our foreign supplies of wool are drawn from a great number of quarters, and every description of climate. As our journal is most likely to pass into hands abroad that have not been reached through the official channels by which the circular of the Chamber of Commerce for the worsted district was issued, we shall draw attention prominently to their requirements, and pass under review the different producing districts and the peculiarities of the wool they supply.

The increase in the imports of foreign and colonial wool in the last five years has been very large. In 1856 we received 124½ million pounds; in 1860, 145½ million pounds; and in the eleven months of the past year 127¼ million pounds. There is a new item in the Board of Trade returns this year, nearly 15 million pounds of "woolen rags, torn up to be used as wool."

The increased supplies of wool have been, however, almost exclusively of a nature to adapt them to the woollen rather than to the worsted manufacture. Those interested in this latter branch of industry are anxious to stimulate the growth of wool suitable for their wants. The qualities they require give to the wool a higher marketable value for all purposes of manufacture, and are therefore well deserving the attention of growers, collectors, and shippers of wool.

The wool (the increase of which they desire to promote) should have a staple from four to seven inches long, according to its fineness, and should, as far as possible, be uniform in quality throughout its whole length; bright and lustrous in its appearance, or soft and kind to the touch, of good spinning properties, free from burrs or other vegetable fibre. It should also be well washed before it is clipped; or where this is not practicable, care should be taken that it be not cotted or felted in drying. It is most desirable to retain the whole natural length of the staple, by only clipping the lambs or sheep once during the season's growth, unless local causes render it absolutely necessary to do so oftener. It is also very important that a proper classification of wool should be made in packing, and that the packing should be thoroughly trustworthy and fair.

An improvement is already manifested in the wool of some countries, and it is thought this might be made general, if proper care were taken in the selection of breeding sheep, particularly of the rams, and, where necessary, by the introduction of new blood. The flocks

should, as much as possible, be pastured upon succulent grasses, similar to those grown in Great Britain. The destructive effects of drought or cold, or other climatic causes which check the growth of the grasses, by depriving the sheep of their necessary supply of food, and rendering the staple tender, ought to be prevented by a constant supply of food throughout the whole year.

The Wool Supply Association, in their circular, pass over in succession the different countries where wools suitable to the worsted trade are cultivated, and point out the faults belonging to each description. We shall quote some few of these practical observations, supplementing at the same time such statistics as will serve to show the quantity we import from these quarters. The wool imported from Portugal, which now amounts to about  $4\frac{1}{2}$  million pounds, is long-stapled and bright, but with a sprinkling of grey and reddish hairs, which depreciate the value and limit the competition. The sheep, also, for want of attention, are apt to produce cotted and yellow-tinged fleeces, which only realize here about two-thirds of the value of free open-stapled white wools. The receipts from Oporto have increased considerably of late years; but a good portion of the increase consists of wool from a lower breed, and is called here "Mountain Oporto." This description is part long, very coarse stapled, and the other part of the fleece is short and dull-looking wool, unsuitable for the same purposes as real Oporto, and realizing twenty-five per cent. less price. By attention this mountain wool might be raised to an equal character with the usually good description received from Oporto.

In Iceland the effect of a cold climate acting upon sheep left to nature, has been to produce a wool consisting of a long spiry coarse top, with a fine downy bottom, which for English consumers is very objectionable, and reduces the value. The annual production in the island is probably about 8,000 to 10,000 packs, and we import of Danish and Iceland wool about  $2\frac{1}{4}$  million pounds.

If the Russian sheep farmers continue as they have hitherto done, to increase the numbers of their flocks rather than to improve their breeds, it may safely be predicted that their export of wool will decline from year to year. It is a notorious fact that the washing and assorting of wool in Russia—operations of great importance—with a few laudable exceptions, are performed with such consummate slovenliness as to be elsewhere unparalleled. Indeed, such is the absurdity and desire for gain of some flockmasters, that they speculate on the increment of weight from dirt, and wash their sheep in muddy water, in the expectation that the fleece will thus bring in more money; the fact being that the price offered by the merchant, who is quite alive to the trick, is in consequence so small, that the advantage redounds to him, and not to the farmer. Again, in assorting the wool, no

separation is made of the different parts of the fleece. Sometimes, too, the wool of dead animals is thrown in among that shorn from living ones; and for ordinary wools, the product of different breeds is indiscriminately mixed. This negligence is detrimental, not only to the sale of wool abroad, but also to the fabric of their home-manufactured cloths, especially in regard to their receiving the dye. In packing and transporting the wool, the negligence exhibited is as great as in any other department, and forms a striking contrast with the care bestowed upon those processes in other countries. The wool is often found to contain a mixture of heterogeneous trash, such as waste of hay and straw, fragments of bags, grain husks, &c. It is also baled in coarse bags of bad quality, which are easily torn, and as the bales are exposed to the weather during the transport, nothing is easier than for moisture to penetrate them.

Deterioration of breeds has been manifested in Russia for some time past, not only in the merinos, but also among the indigenous sheep. There are in that country several sorts of these common breeds, some of which yield such coarse wool that it can only be used for the manufacture of the most inferior felts, or in the caulking of ships. But there are also others, of which the wool is employed for several sorts of ordinary cloths, and might be improved, at least up to a certain point, by judicious crossing and more careful management. Instead of being regenerated by coupling with rams of a better breed, they are allowed to mix with races more inferior still; and their scanty nurture in winter, in connexion with the inclemency of the season, likewise has a tendency to render their wool coarser. Out of about 50,000,000 of sheep in Russia, there are not more than one-fifth fine-woolled sheep. The Donskoi sheep is probably in a state of nature, or at least partially so, and the Crimean entirely so. Both these admit of great improvement, and by care for a few years a long-stapled good combing wool of fine quality might be produced, upwards of 30 per cent more valuable. At present we receive about  $8\frac{3}{4}$  million pounds of wool from Russia.

The wools from Turkey (Asiatic and European provinces), which now reach us to the extent of 1,000,000 lbs., are usually very scurfy and kempy, both of which serious faults may be eradicated by attention. It seems as if most of the wools got no care at all. There is the basis of capital combing wool, even if the growers cross with their own selected rams, without the introduction of English sheep.

The Egyptian wool, of which we import about 2,000,000 lbs., possesses many of the properties sought for by the consumers here. The staple might be long enough if the native collectors and growers did not induce the practice of shearing twice in the year. The wool is bright, sound and silky, but is sometimes spoiled by a sprinkling of grey hair; also by the admixture of ill



bred, rough, fuzzy wool, known in trade as Syrian.

The wool received through Mogadore—under 1,000,000 lbs.—is deficient in lustre, kempy, and of a brownish colour; but, by judicious crossing with English blood, it could be brought to resemble our breeds, and find a large and remunerative market.

In the East Indian and Persian wools, of which considerable supplies are now coming forward (upwards of 20,000,000 lbs. per annum) improvement has already commenced, and a large field awaits further development. Each year's imports are collected from a wider range, and as we penetrate into a more temperate region we find wool of a longer and sounder staple, assimilating more closely to our English descriptions than the short hair wool that is usually grown near the tropics. East Indian wool has a tendency to be burry and scurfy, with a slight mixture of gray hairs. The staple is generally too short.

Our supply of wool from China has been on the decline, as it found little favor here. The imports have dropped from 300,000 lbs. to about one-fifth of that quantity. It is unusually soft, short-stapled wool, looking neither like fleece nor lamb, and is very cotted, kempy, and yellow. No attention seems to be bestowed upon it by the growers, but when a regular demand arises, the Chinese will, no doubt, give more attention to it, and effect desirable changes. From the extraordinary fecundity of the sheep, large quantities might be produced.

It is gratifying to see that the Central Farmers' Club has the growth of lustre wool on the card for this year; while the correspondent of a local paper thus refers to the home growth; "The lustre wool is not much in request, and I should be especially glad of a well-reasoned and authoritative opinion as to whether or no its regular production could be depended on upon the light farms of Hants and Wilts? My own opinion is that a flock of Lincolns would, if the rams were always brought from Lincolnshire, and the flock regularly fed on turnips, &c., retain the lustrous character of their fleece."

### Changes of the Atmosphere.

*(From the Mark Lane Express.)*

The mutual dependence of the various phenomena exhibited within the limits of that vast aerial ocean, the atmosphere, and the modifications that each meteorological process undergoes through the agency of all the rest, has tended to retard, and render extremely difficult, its practical application to the wants of every day life. The complexity of the causes which disturb our atmosphere is so intricate, that it becomes a nice and delicate task to determine what is cause and what effect, so completely does the one seem to take the place of the other, according to the point of view from which we make

our observation. For this cause meteorology seemed rather to belong to the region of speculative philosophy than to rank as one of the exact sciences; and the only persons by whom it was much followed seem to have placed their faith in the very problematic power of empirical predictions, rather than attempt to trace causes from observed effects. As an example of the many and different modifying processes through which nature works, let us spend a few minutes in considering the causes which operate on some of the currents of air, so regular within certain limits, yet so varied in our own latitude. Sufficient attention has not been paid to the subject of the winds, either by the agriculturist or the philosopher; a fact in a great measure owing probably to the want, till late years, of self-recording anemometers. A good trustworthy wind vane is a very useful thing in any case, and should be often consulted; but we can hardly hope for any very concise results, unless we have the means of tracing, through a long period of time, every movement and change in the direction. It is only from an uninterrupted series of such records that we can expect to establish, finally, the periods of so apparently erratic an element as the wind. One can scarcely realize the fact that the gentle air as it fans the bronzed cheek of southern Europe, and with a soft persuasion wafts the tiny skiff over the unruffled waters of some placid lake, is the same element that, when acted upon by certain forces, unseen, yet not the less powerful, hurls destruction over land and sea, turning the calm waters, where the ship like "a painted thing upon a painted sea" rides at anchor, into a raging and furious flood—a remorseless and quick destruction alike for ship and human life. The fiery simoon and sirocco of the Indies, the pestilence-bearing winds of western Africa, the tempestuous gales that crush and tear to atoms the floating homes of hundreds, filling the coasts of more northern climes with death and horror, are all of one family with the soft breeze that wakes with gentle murmur a summer morning, or the cooler airs that, as the shades of night draw on, seem to sigh for the departing day. Truly we cannot tell "whence it cometh or whither it goeth," and can only trace its course over a limited space by the marks of its iron foot-step, or by the more refined appliances of science. But who can tell the place of its birth? The human mind can hardly conceive by what Titanic forces the light and buoyant air is acted upon, that in its headlong course it overturns the strongest monuments of human art, as well as the giant inhabitants of forests, whose seeds, perchance, had germinated under the same sun that cheered our Saxon forefathers.

We shall better understand the various disturbing causes which exert their influence on the atmospheric pressure, if we commence by examining what would be its state if but few of the causes existed. Let us suppose our earth

covered with water of an equal depth, then there would exist but little variety either in the force or direction of atmospheric waves. The only causes which would under these circumstances, operate to give the air motion would be the rotary motion of the earth round its axis and its position in regard to the sun. In addition, suppose the sun to be always in the equinoctial; in that case, we should have a system of winds like those existing at certain times of the year at the tropics called the "trades" which would be invariable, the mean line of direction prevailing at the equator, whilst the earth's motion would modify the currents as we went towards either pole gradually. But this constancy is wisely upset by two main causes, viz., the movement of the sun in declination, which tends to carry the middle line below or above the equator, according to the season, by  $23\frac{1}{2}$  degrees; the other disturbing cause is to be found in the existence and peculiar form of the continents. There are many other causes of wind of a local character: the variation in colour of the landscape, and, consequently, the unequal radiating power of different tracts of land, will tend to disturb the atmospheric equilibrium; whilst the difference between the radiating and absorbing power of the sea and neighbouring land causes those diurnal currents experienced by the sea, especially in tropical regions, known as land and sea breezes. During the day the land acquires a temperature higher than that of the adjacent ocean; the atmosphere above it consequently becomes rarified, and the air from the sea flows towards the land, to occupy the partial vacuum produced there. In proportion as the heat of the land goes on increasing, the force of the sea breeze increases also; and this continues up to about 2 or 3 p. m., varying slightly with the season. After that time, the land more readily giving off the heat which it received during the morning hours, the land cools much more quickly than the sea, and the sea breezes cease about sunset. During the night the land continues to cool, and the air over the sea comparatively warmer; and the air therefore sets from the land, where it is denser towards the sea.

Now, when we consider how many causes there are combining to make the sun's action very unequal over the surface of the globe, and the consequence in the temperature of the air lying over it, we can hardly fail to see the reason why the currents of air coming to us are so diversified both as regards strength and direction; our removal from the limits of the "trades" being another reason of our not experiencing the periodicity of the tropics. Hitherto, as we have remarked, the observations relative to the phenomena of the wind have been very inadequate for the purpose of determining much about the laws by which they act in our latitude, owing to the number of disturbing causes. What is a *cause* in the tropics becomes

an *effect* in our latitude; the cause existing beyond our limits. For example, the temperature is the cause, perhaps of a certain wind in the tropics. Now with us, it frequently happens that the *wind* is the cause of a change in our temperature. The element of meteorology will, no doubt, as observations become more numerous, be much better understood than it is at present; and as the wind affects the climate of our globe to so large an extent, by bearing moisture and heated air to regions remote from the places of their birth, and also by causing the circulation of differently heated oceanic currents, a better knowledge of its force, direction, &c., both as regards the more extended movements, as well as the influence of local peculiarities, is much to be desired.

### The Parsnip.

The parsnip is one of the most valuable roots that can be grown. In the Island of Jersey it is used almost exclusively for fattening both cattle and swine. According to La Couteur the weight of a good crop varies from thirteen to twenty-seven tons per acre. When parsnips are given to milch cows, with a little hay, in the winter season, the butter is found to be of as fine a colour and excellent flavor as when the animals are feeding in the best pastures. As parsnips contain six per cent. more mucilage than carrots, the difference may be sufficient to account for the superior fattening as well as butter-making quality of the parsnip. In the fattening of cattle the parsnip is found superior to the carrot, performing the business with more expedition and affording meat of exquisite and highly juicy flavor; the animals eat it with much greediness. The result of experiment has shown that not only in neat cattle, but in the fattening of hogs and poultry, the animals become fat much sooner, and are more healthy than when fed with any other root or vegetable, and that, beside, the meat is more sweet and delicious. The parsnip leaves being more bulky than those of carrots, may be mown off before taking the roots, and given to oxen, cows or horses by which they will be greedily eaten. Another thing in favor of parsnips for this country is, that the frost does not injure them. They may remain in the ground until spring, when they make a splendid feed, at a time when every other kind of root or green thing is scarce, or they may be slightly buried, where they can be obtained almost any time during the winter. On account of their rapid growth when young, the weeding is less trouble, than weeding carrots.

**CUTTING SEED POTATOES.**—The effects of dividing potatoes as seed have often been discussed, some stating it as their belief that the plan was good, others as vehemently insisting that



it was as wrong in principle as it was bad in practice. Certainly, reasoning from analogy, the latter seems to have the best of the argument. May not the dividing of the seed year after year be stimulative of disease—at least by weakening the powers of germination of the plant predispose it to disease? The following is the result of an experiment on the growing of potatoes. The experimenter planted 27 holes with whole potatoes; 23 with cut potatoes, three pieces in each hole; 23 holes with cut potatoes, two pieces in the hole. The seed used was averaged by weight and size. The holes of uncut potatoes yielded  $55\frac{1}{2}$  lbs., the 23 with three sets in each  $27\frac{1}{2}$  lbs., and the 23 holes with two sets  $39\frac{1}{2}$  lbs. The treatment as regards manure, soil, &c., was alike for all the plots.

## Agricultural Intelligence.

### Spring Shows.

We are informed of the following Shows to take place this Spring. We request secretaries of Agricultural Societies to inform us of the date of their exhibitions at as early a date as possible, so as to admit of publication in time to be of use to those interested:—

Fullarton, Logan, and Hibbert Agricultural Society, at Mitchell, April 2.

West Riding of York Agricultural Society, at Weston, April 23.

King Township Show and ploughing match, at Kettleby, April 22.

### Italian Pigs.

From a letter describing the animals at a recent agricultural exhibition in Italy, we copy the following:

"A few of the pigs seen here were small, rather fat, pig like cleatures; but the greater part of them were enormous, boar-like monsters, some white, some black, some very hairy, some with tusks, some without; all of them the most gaunt, long legged, diabolical looking brutes imaginable. The little round fellows were of the Cinese breed; the hairless frights were from the lovely Val d'Arno; the most formidable tusks were from Contentino and Sardinia; the most highly prized appeared to be the Tuscan Gentil, and Forestieri, black giants, almost wild, living in the woods, weighing from 600 to 700 Tuscan pounds, with long, boar like, black bristles, long tusks, and legs like stilts: bold enough to attack a traveller, and ferocious enough to give him a good deal of trouble, but furnishing pork of a superior flavor, and hams which appear to occupy a high place in the affections of Italian *gourmets*. Some of these brutes were seven feet long, without counting their long snouts, and longer tufted tails. Prince Orsini, Prince

Demidoff, and a numerous company of dukes, marquises, counts and barons, seem to have devoted their energies with especial zeal and success to the development of the porcine genus."

## Horticultural.

### Dwarf Standard Fruit Trees.

TO THE EDITOR OF THE AGRICULTURIST.—I saw a report in your valuable paper of February 1861, of a Fruit Growers' Association for Upper Canada being formed, for the purpose of collecting all the information possible, to advance the interests of fruit growers in this section of the Province.

This appears to be a step in the right direction, for as Horticulture is only in its infancy in Canada, the time cannot be hastened on too fast that every one may sit under his own vine and his own fruit tree, to enjoy the fruit of his labour.

I would like to become a member of the enterprising Fruit Growers' Association, to help along so good a work, but the distance is so great between us that I fear we will seldom meet, unless it should be through the columns of the *Agriculturist*. And these long winter evenings should be the time employed for the purpose of giving our experience to those that wish to be benefited by it.

Dr. Beadle calls on me in the February number of '61 to give some further particulars on some points than I did in my essay. This I should have done long ago, but being such a poor hand at putting my experience on paper is my only excuse. If Mr. Beadle should call on me sometime when at my plough or at work in my orchard, I could sit down and tell him much better my experience in fruit culture. But such as it is you must accept, otherwise throw it under the table. Mr. Beadle makes the remark that, I say in my essay that it is the hot sun of July or August that causes the disease I mentioned in the body of the trees. This I still believe is the first cause, followed up by the extreme heat and cold of March causing the disease to break out and fully develop itself as described in the essay, by the bark peeling from the body of the trees.

Mr. Beadle enquires our mode of trimming and cultivating the low top trees. This I think we described in our essays, which you can turn to in the July number of '59. But the advantage is not only in the protection of tender trees from the diseases before described, but also in the convenience and ease in their management, such as trimming, when you can remain on the ground to do the work, instead of climbing gorilla-like in high trees, marring and bruising every limb you step your hard nail bottomed boots upon, or poised upon a ladder, subject to falls and bruises. You often likewise wish to have the

company of your children to assist in gathering the fruit. But if a large apple should fall 10 or 15 feet from some high limb, and strike one of the little urchins on the head, it might leave him senseless on the ground, besides there is the loss of all such apples being bruised and unfit for market. But the advantage in favor of low trees is not only in the protecting of their bodies and in trimming, but also in the fruit being protected from being blown off by the winds, the convenience and ease of gathering the apples, bringing them in the barrel sound and fit for market, in keeping the plough away from tearing the upper and best roots, and the whittle trees from rubbing off the bark from the side of the trees, the trees bearing fairer fruit, and in making the labour much less in scraping and washing their trunks. Mr. Beattie recommends the bodies to be 3 or 4 feet, but I want the limbs to branch out from the ground, then snow covers up their short bodies in the winter and protects them from the frost and sun, one of the most important points. Your committee has informed the public on one very important point, in publishing the hardy kinds, all others should be abandoned. One half of the apple trees published in the American catalogue should never cross the water, or be planted this side of Toronto, for when so many fail it has a tendency to discourage men from planting. We must search for more hardy varieties, by testing new kinds that have been introduced. I shall plant out 50 or more new kinds this spring, and if I get one or two out of that number that proves hardy, I shall be well paid for my trouble. Without doubt there are more hardy kinds, and we must find them.

R. B. WERDEN.

Picton, Feb. 27th, 1832.

### On the Culture of the Vine in the Open Air.

[Read before the Hamilton Horticultural Club, by D. A. McNabb, Esq., March 4th, 1862.]

MR. PRESIDENT: SIR.—Your Secretary has assigned to me, the production of an Essay on the cultivation of the Vine "in the open air."

So important a subject he should have placed in the hands of a member more competent, and numbering, as our club does, so many practical gardeners, this would have been an easy task; such a course would also have brought out the fullest information, information that would convince any one having unoccupied ground 12 feet square, that it is his own fault or the time is not far distant when he can sit down under his own vine and enjoy the fruit thereof.

You (Mr. President) may be assured that it has puzzled my wits considering what course to pursue in framing such an essay—that it might be plain, simple, and to the point. The conclusion come to, is to give you the

course I annually pursue, convinced that that course when followed by others will produce the same results, making Western Canada, what it ought to be, a grape producing country.

Select a piece of ground having a south-east aspect, and sometime during summer trench it 2 feet deep, (if not let it be properly drained) trenching in as much top sod as can be procured from any old pasture, carefully avoiding animal manures of all kinds.

Prepare a lot of stalks 6 feet long and in number according to the quantity of vines to be planted, commence 4 feet from the walks, insert the stakes 18 inches in the ground, 12 feet between each stake and 15 feet between each row. In September or first week in October, having obtained good strong layers, (one year old) commence planting. I was going to say cut your layers back to 3 eyes, but your nurseryman will do that for you if you purchase the best varieties. Take off 2 inches of soil around each stake in a circle equal to the vine's roots to be planted, tie a vine on the south side of the stake, carefully extending the main or larger roots in straight lines from the stake, arranging the smaller ones in their natural position, with a trowel in hand commence at the extreme end of the roots and cover them with the earth taken from the circle and from the alleys, take sufficient earth to cover the roots with 4 inches of soil, pressing it firmly with the foot, which will finish the planting. I would here urge the importance of spending some little time even in minutely placing each root and rootlet in its natural position; if this is carefully done, not one vine in one hundred but will take root and establish itself before winter sets in. Nothing now remains to be done but to protect the vines with evergreen branches, and where such cannot be obtained, corn stalks or any clean dry litter will be suitable.

*Second Season.* If the vines have been covered with any kind of litter liable to decay, they should be examined shortly after the first mild weather, taking such decayed litter away and re-covering the vines with clean dry straw. During this season little requires to be done more than keeping down weeds and when ground is an object many kinds of vegetables or root crops may be put in, but if done a circle 3 feet in diameter around each vine should on no account be dug.

About the middle of May the vines should be examined, and where more than one bud has started pinch back the second to one leaf, and the one next the ground rub clean off.

During summer as the vines grow, pinch back the later branches to one leaf, tying the vines up to the stakes. About the middle of July mulch the ground around each vine with fresh stable manure 3 inches deep forming a circle around each vine 3 feet in diameter.



During the first week in October fork over the ground turning in the mulching and any *rich soil* from properly decayed manure. In November examine and Fall prune the vines, and if they have ripened 6 feet of wood a small crop of fruit could be taken from them during the third season, in which case the laterals should be cut back to the fruit buds, and the canes cut back to 3 feet, but as this is not desirable I would advise cutting back the canes to 3 buds and protecting them during winter as directed in the treatment for first season.

**Third Season.** The treatment this season will be same as the second, for vines cut back to three buds, and for those allowed to fruit the course will be pointed out in the treatment during the fourth season except in fall pruning; the canes should be cut back to 5 feet 6 inches.

**Fourth Season.** The vines having ripened canes 5 feet 6 inches, about the first of May, or earlier if the buds are pushing out tie each vine up to its stake, rub off all buds that appear on the first 10 inches of the cane from the ground, thus giving ventilation under the vines. The next two buds should be allowed to run, that is they should grow without pinching unless it be to pinch any blossoms they may show. When the remaining buds show leaves beyond the blossoms, begin at the top of the vine, and rub off all leaves except one before you come to the leaf opposite the first blossom, leaving one leaf after the last blossom, pinch back the fruit-bearing-branch. It may be here stated pinching is done with the thumb nail and forefinger, and when the summer pruning is done at the proper time—is the only scissors required during the season of summer pruning. The end of May or beginning of June the laterals will begin to push out, pinch these back leaving one leaf—and at the risk of being considered moon struck on the grape question, I would state—Each new moon indicates the proper time for pinching in the laterals, for at such a period in each month, you will find the vines pushing out new laterals which are easily pinched back to one leaf. About the first of July perform the same operation, and about the fifteenth mulch the vines with fresh stable manure 3 inches in depth and in circles 4 feet in diameter around the vines. On the first of August pinch back the laterals, and on the first of September perform the same operation for the last time during the season.

The fruit will now begin to color and during that period the vines should not be pruned.

On the first of October your grapes should be ripe, varieties requiring a longer period to mature are not worthy of cultivation around this locality and much less north of Hamilton. Consequently the crop should now be gather-

ed, and when done the ground should be forked, adding rich virgin soil as proposed in the first part of this essay.

During November the fall pruning should be done, and as there are so many styles of pruning and training the vine, I would refer to any work on the subject, that such style as pleased the fancy might be adopted. If the upright system is selected the main cane and the two leaders produced should have all laterals cut back to the fruit bud, and the leaders cut back to 5 feet each from the main stem, those leaders will give a crop the following season.

During the fifth and following years two side branches should be added annually, say 14 inches apart, that the last two would be at the top of the main stem, thus giving four branches on each side of the upright or main stem, when the vine is complete.

In after years the side branches may be worked upon the renewal system, or, as I have found suitable for this climate when the spur system failed during cold winters, the vines can be fruited upon what is known as "*old wood*" that is wood of more than one year's growth. When this system is adopted the vines should be pruned back in the fall, leaving only the upright and side branches, or what is known amongst gardeners as, the "walking stick system."

In May following when the vines are tied up to the trellises it will be found half a dozen buds have pushed at each joint. Begin at the top branches next the upright, select two of the largest buds out of the remaining ones and leaving 13 inches between each pair of buds, or as near that distance as can be arranged—thus go over all the branches.

In four to five days after this operation the buds will shew fruit blossoms, then go over the vines again, rub off the weaker one of each pair of buds, and follow up the treatment as directed for summer pruning during the fourth season.

I cannot close this essay without urging the necessity of taking every care to protect the surface roots of the vine, never using a spade nor digging of any kind during spring or summer, such a course will in a great measure prevent mildew as also increase the sources of supplying the vines with nutriment to produce and mature the fruit. You (Mr. President) will perceive in the foregoing remarks that nothing has been said in favour of making vineyards or vine borders, a receptacle for every description of filth. At the same time when earth formed from decomposed bodies, whether fish, animal or vegetable, can be obtained, no doubt such is very desirable, and when forking the ground in fall a reasonable quantity should be forked into the ground, thereby preparing a fund from which to draw a future crop of grapes, if there is an

exception to this rule the article is bones, those may be added in any quantity.

Nothing has been said regarding vines most suitable for cultivation, perhaps such is hardly within the province of this article. However, the Fruit Growers' Association have recommended the new varieties and no doubt such will be the general favourites until more suitable Canadian seedlings are produced, an event many would be pleased to see, and which may not be far distant, as many besides practical gardeners are giving this matter their attention.

As regards climate, there cannot be a doubt in the minds of those who have given this subject any thing like a fair trial, that grapes can be produced, and that in large quantities, nor is the time far distant when the shores of Lake Erie and the banks of the Detroit river will produce grapes in quantity and quality, making it at least unnecessary to import them from Kelly's Island or any other part of the United States. Now Mr. President, as you have the little I know regarding vines in the open air, I trust your Secretary will place this matter in such hands next year, that still further information will be placed before the club, information which will produce vineyards around this and other localities, making Canada as I said before a Land of Vineyards.

### Tree Wounds.

Young and vigorous trees, when injured or wounded, soon begin to heal of themselves, and in time the wound is healed or covered over by the successive layers of alburnum that each year forms and converts into wood. Very many of these wounds, however, will heal over a great deal quicker if a little care be taken in cutting away any dead wood or projecting splinters and covering over the wounded parts by some composition, such as grafting clay or grafting wax, or with a plaster of mortar made of slaked lime, sand and pulverized burnt bones, or even by a plaster of hydraulic lime.

Any one who passes through an orchard that has been subjected to the common tomahawk pruning will learn a good many lessons of nature in regards to her efforts to heal up and heal over the wounds that have been inflicted. You will see that where a limb has been cut down smoothly and level or even with the body from which it started, nature, in a year or two, has closed it up, leaving only a neat, compact cicatrix. But where a stump has been left sticking out two or three inches, you will see the efforts of nature have been in one sense, thwarted. The end of the stump still projects out dry and hard, while several layers of alburnum have been laid up one upon the other, and working inward as if endeavoring to climb over and enclose and hide it from view. If the life and

vigor of the tree continues long enough, this will be accomplished, but in many instances it fails of doing it, and the naked stump continues to project for a while as an evidence of the folly of the man who cut it off, and then the weather begins to destroy it, and decay commences. The wood rots and falls out and an unsightly hole or cavity is the result. The lesson to be learned from this is—cut limbs smoothly and even with the body from which they start, and then cover over the wound with some preparation that will prevent the decay of the wood exposed, and at the same time allow the layers of alburnum or sap-wood to be lapped on each year by the natural process.

Oftentimes these unsightly wounds can be sooner healed, by cutting down the dead wood to a level with the bark, or by a gouge, a little below, so that each successive layer of sap-wood formed after this shall roll inward and close on and over the cut instead of having to climb up, as it were, over the projecting stump before it can begin to hide the cut across the limb. A very little observation and care in these matters will soon give one an insight into the laws by which nature operates in her healing process, and by following nature, you can not only prevent much loss of her valuable labor, but can even hasten, in many instances, her labors and perfect the results desired.—*Maine Farmer.*

**WILD VINE.**—It has often asked whether wine could not be extracted from the wild grapes that grow spontaneously in many parts of Canada, and the same question may have presented itself to many of our readers who, while strolling in the vicinity of Montreal, have observed in the autumn, tempting clusters of this indigenous fruit bearing down branches of young trees, or peeping out from the high foliage of the stately denizen of the forest. Mr. de Courtenay, who has passed many years of his life in vine growing countries, lately leased Col. Sewell's villa near Cap Rouge, where he had an opportunity of becoming acquainted with the wild vine of Canada. Being familiar with the art of wine-making he succeeded in extracting from 10 lbs. of fruit produced by one vine, ten bottles of wine of a beautiful color and tasting like Bordeaux; of these, three bottles were of a first quality and seven of a second; besides five bottles of vinegar. It is said Mr. de C. intends to plant ten acres next spring with Canadian vine.

**A SPRING TART, RHUBARB.**—Does anybody doubt, or not know the desirableness of this vegetable! Then we pity him. It is one of the finest things in the world to make a pie or spring tart. Apples often give out in April or May, and those which remain are withered and tasteless. Man's stomach longs for something fresh, crisp and juicy. The pie-plant affords that very thing. It forms a connecting link in the year-



long chain of articles for pie making. Think, too of the doctor's testimony, that it is "one of the most wholesome, cooling and delicious substances that can be used for the table. For dysentery in children, it is an infallible remedy, stewed, seasoned with sugar, and eaten in any quantity with bread." We have tasted samples of fair wine made from this plant. It is also used for jellies and jams.

**Mode of culture.**—Procure a few crowns, with roots attached, and set out only one in a place. Rhubarb will live in any kind of soil, but to get large, succulent stalks; the soil must be deep and rich. Five or six plants are enough for an ordinary family. Lay off a bed 20 feet long by 4 wide. Remove the top soil; break up and manure the subsoil heavily, and then return the top spit to its place. This last should be enriched with a light dressing of old manure; and if the land is stiff clay, a little sand should be worked in. Then set out the crowns by a line, four feet asunder, leaving the plump, pinkish beds an inch or two below the surface. This work may be done in the Fall or early in Spring. New roots will soon form, and the growth will rejoice the eyes of the planter.

The after culture is very simple. Keep the ground free from weeds. Pluck no leaves the first year. In the Fall, put a peck or more of coarse manure around each plant; this will protect the roots and furnish nutriment for the next year's growth. In the second summer the leaves may be plucked in moderation, and after that quite freely. Let the plants, however, have their autumnal dressing, to be forked into the soil the following Spring. In our own grounds, we have pursued this course several years; and now the stalks and leaves of our plants are so magnificent, we are often asked the name of our new and improved varieties. We uniformly reply by pointing to the manure heap.

**Forcing.**—If any one wants to get a very early tart or pie, he should, towards the end of this month, set a barrel or rough box—headless and bottomless—over the crowns of several early plants, and surrounded the same with fresh manure from the horse stable. Put a few forkfulls inside of the barrel, and a bushel or more outside. This will soon generate a local climate of 50° or 60°, and give the plants a start, while those not so treated are yet asleep. The barrels should be kept nearly or quite covered for ten days, and then gradually opened as the season and all plants progress. Add a little fresh manure outside the barrel after the first week. As soon as the other plants are fit to cut, the forced ones should be uncovered and allowed to rest.—*American Agriculturist*.

**VENTILATION OF FORCED PLANTS.**—Probably, the most delicate of all the requisite operations is the proper regulation of the supply of moisture to root and branch. A certain amount of moisture is essential to the health of all plants,

and this amount varies in different cases; but with few exceptions, certainly as a rule in the case of flowering plants, this must not approach to the state of wetness. Formerly it was thought that these plant cases, or Wardian cases, required to be kept constantly closed, and then the plants were continually in a vapour bath, and as a consequence, they were as continually "damping off." It is now better understood that ventilation is absolutely necessary to the growth of plants in glass cases; and one object of ventilation is to regulate the atmospheric moisture by carrying off the excess, which would cause the flowers and leaves, and, in extreme cases, the stem itself, to rot. Experience alone, but experience soon to be gained by an intelligent and watchful eye, can teach a safe lesson as to how much moisture is necessary in particular instances. Probably, the safest rule is to allow the plants only the smallest quantity of water which will keep them from drooping, and in winter, at least, it will be found that within the shelter of the glazed covering the soil will dry so slowly that weeks may intervene between the waterings, especially if the pots are plunged in some such material as dry sand, which is desirable. When artificial heat is employed, as when bulbs are forced into bloom, a greater amount of moisture will of course become necessary.

**KEEPING CELERY IN WINTER.**—A correspondent of the *American Agriculturist* says:—I carefully lifted my celery with as much earth as would adhere to the roots, and set the plants close together in the milk trough in my spring-house, and at once put in and have maintained about 6 inches water in the trough. The celery shows as much vigor of growth now (Jan. 15), as before transplanting, being much larger now than when it was dug up, bleached nicely, and the new growth is very fine and crisp.

## Domestic.

**HINTS FOR CLEAR SPARROWING.**—Collars, under sleeves, or handkerchiefs, of very fine muslin or lace, will not bear much squeezing or rubbing when washed. They can be made perfectly white and clean without either, or by the following process:—Rinse them carefully through clean water, then soap them well with white soap, place flat in dish or saucer, and cover with water; place them in the sun. Let them remain two or three days, changing the water frequently, and turning them. Once every day take them out, rinse carefully, soap and place in fresh water. The operation is a tedious and rather troublesome one, but the finest embroidery or lace comes out perfectly white, and is not worn at all, where, in common washing, it would be very apt to tear, when they are white, rinse and starch in the usual way.—*German town Telegraph*.

## Veterinary.

### Pleuro-Pneumonia.

Report of a committee appointed by the Massachusetts Board of Agriculture to enquire into the state of this destructive disease among horned cattle, published in a recent number of the *Boston Cultivator*.]

The undersigned, a Committee appointed by the Board of Agriculture to prepare a statement of facts for publication in relation to the cattle disease, would respectfully report that—

Having good reason to fear that the disease known as pleuro-pneumonia (so fatal in its ravages among the neat stock of North Brookfield and vicinity in the years 1859 and 1860) has again made its appearance in several towns in the county of Norfolk, they feel it the duty of this Board to warn the farmers and others, owners of neat stock in the Commonwealth, that the time has arrived for them to take every precaution to prevent the spread of this scourge; and in view of its contagious nature they would urge the necessity of the greatest care being taken by all interested in purchasing or permitting strange cattle to come in contact with their herds.

The disease now claiming our attention made its appearance in the town of Quincy last April, breaking out in two herds nearly simultaneously. Eight animals from one of the herds were sold to a person in Randolph, in the month of September, for \$85 for the lot. One of these animals died before reaching the home of the owner and three months shortly after. The other four have been lost sight of. One herd in Milton, and also one herd in Dorchester, have been affected for some months. Four animals from one of these herds, which had been sick during the summer of last year, but had apparently recovered, were taken to Brighton in the fall and sold. Four of the other herd have since died or been killed—all presenting a seriously diseased appearance. On examination by the veterinarians conversant with the Brookfield complaint, they pronounce it identical, so far as they could judge. There are four or five animals still left of this herd, some of which are either sick or showing symptoms of contagion. There are also other cases which have not been examined—the Selectmen of the towns waiting the action of the Legislature in passing a law authorizing a new commission. The law has now been passed, and the commissioners appointed, and we would respectfully urge upon the gentlemen composing that commission, the great importance of immediate measures to investigate the disease, and if necessary applying the remedies placed by the law in their hands, that the ravages of this fearful pest (which there is little

doubt is identical with the Brookfield disease, and which can be traced to that neighborhood,) may be stayed.

There being doubters in the community as to the existence of contagious pleuro-pneumonia, earnest attention is called to the thorough and convincing report of the first Board of Commissioners, with accompanying documents, published in the report of the Secretary of the Board of Agriculture for 1860.

We believe that no person, however prejudiced he may have been, who has been present at the examination of affected animals, has failed to become convinced of the contagiousness of this disease; and it would seem impossible that any one can doubt this fact who will take the trouble to examine the various reports that have been made in Europe and in this country on the subject.

HENRY H. PETERS, of Southborough,  
PHINEAS STEDMAN, of Chicopee,  
FREENAN WALKER, of No. Brookfield,

Committee.

Boston, Feb. 27th, 1862.

## Miscellaneous.

### A Chapter on Clouds.

(FROM THE BOSTON CULTIVATOR.)

The study of clouds is interesting and useful. A knowledge of their changes, the phenomena which they present, the endless variety of shape and size which they assume, their formation and dissipation, their varying colors, all combined to render them objects worthy of investigation. They are intimately connected with the human affairs of the world. Their appearance in the morning influences the business and pleasures of the day; their changes during the day control the plans and often frustrate the wishes of man; their character at night is consulted in arranging the operations of the following day. The business of all classes is influenced more or less by the changing clouds. The farmer daily observes them and plans his work according to their indications. It is of the utmost importance that he should understand their character, the laws which govern their formation and dissipation, and the beneficent purposes which they continually accomplish in their varied movements.

A classification of clouds was made by Luke Howard in 1802. He divided them into three primary classes; cirrus, cumulus and stratus, with intermediate forms passing into one another under the names of cirro-cumulus, cirro-stratus, cumulo-stratus and a composite form, resulting from a blending of the others, under the name of nimbus. Cirrus clouds appear like parallel fibres or loose hairs extending in any or all directions. When the streamers point upward the clouds are falling and rain may soon



be expected; but when they point downward, fair weather is at hand. Cumulus clouds are those convex or rolling or globular masses which resemble volumes of smoke, or huge mountains piled upon one another. When they are fleecy and sail against the wind apparently or in an upper current, they foreshow rain; when they come up with the wind and their outline is clearly defined fair weather is near. If they diminish in size near sunset, the following day will be fair; if they increase, it will be foul. Stratus clouds are those which fly along near the surface of the earth, widely extended, horizontal sheets. They are thin and misty, and such arise from beds of moisture in low lands soon after sunset. The cumulo-stratus clouds are those which assume all kinds of gigantic forms; such as vast towers, piles of rocks, &c. In the vicinity of the White Mountains, their appearance is wild and romantic. Travellers have noticed the strange sublimity which hangs around the clouds in this region. The majestic career of these vast mountain piles urged on by the winds and electric forces just before a storm is grand and imposing. Cirro-cumulus clouds are heavy masses, edged with long streaks called "mares' tails." They foretell dry, hot weather. When combined with the cirro stratus form, which is called a "mackerel sky," they always indicate rain and wind. Nimbus clouds are rain-clouds, and are without any definite outline.

Clouds are formed by the condensation of the invisible moisture in the air by colder currents and are wafted in masses from one region to another by the force of winds. They give the earth a sombre hue. I verily believe there is more scolding about cloudy days than all other troubles combined.

Clouds are transitory visitors. They come on the "wings of the wind," arrayed in fantastic shapes. Their forms greet us with seeming smiles as they vanish in "dissolving views." It is a pleasant thought to imagine them chariots of angels. On Olivet's sacred mount a cloud received the Holy One and bore him away from the gaze of the wondering disciples. They parted over the Jordan and out from the azure depths of heaven came the baptismal words "This is my beloved Son." The holy records are replete with imagery of which clouds are the medium. My thoughts are often attracted to the pleasing phenomena of the canopied heavens and the material uses of the clouds to man.

Clouds are dissipated by warm, dry currents of air which absorb and render them invisible. Some of their notions are influenced by electrical attractions and repulsions. The friction produced causes the electricity in the clouds, which may be called the manufactories where the winds grind it out to supply the never-ceasing demands of Nature. The electrical displays from the thunder cloud have been witnessed

since the earliest ages; and the investigations of science have thrown a halo of interest around the "frowning barriers of heaven," whose glittering artillery was once regarded with fear and trembling, as the expressions of the Divine displeasure; but now transfused with a brighter glow as they have been brought down to the earth and tamed for the service of man.

Who has not beheld the indescribable glories of our New-England sunsets? What illimitable fields of cloud scenery! What exquisite pencillings they display! What displays of magnificence and splendor! If beheld but once in a century men would gaze, as upon the very throne of the Eternal. And yet these scenes of beauty, so unspeakably fair, image a higher beauty which no man can look upon and live.

The shaded tints of purple which are impressed upon the irregular edges and surfaces of clouds are caused by the red rays of sunset, which, being the least refrangible are the last to disappear. They indicate fair weather, for they show that the vapor is not condensed into clouds by the cold of the evening. Our Saviour referred to this prognostic in the following words: "When it is evening ye say it will be fair weather for the sky is red." Their appearance in the morning denotes a wet or a fair day. Hence our Saviour's observations, "In the morning ye say it will be foul weather to day, for the sky is red and lowering."

The clouds are the great store-houses of rain, the uses of which are so apparent, I need not refer to them. The arrangement for its inexhaustible supply in proper quantities and at the right time, through the medium of the clouds, excites our wonder, admiration and gratitude. Again they temper the heat of the sun's rays and prevent a too rapid evaporation of the moisture from the earth's surface. They also arrest the radiation of heat from the earth; in consequence its surface remains warmer than in clear weather; hence the reason why there are no frosts in cloudy nights. What splendid protectors to the grain fields and fruit orchards are the clouds! How admirably do they wrap up the earth as in swaddling clothes, disarming the frost of its power! They mitigate the severity of a northern winter, and moderate the excessive heat of summer. Without them the earth would be a Sahara. Vegetation would die; springs would dry up; rivers cease to flow; famine and death would hold undisputed sway and the "earth would melt with fervent heat."

WM. A. WHITE.

DESCENT OF THE EAGLE.—In *Forest Creatures* by Charles Boner, we have an account of the remarkable power possessed by the eagle of instantaneously arresting himself while dropping through the air at a certain spot, with folded wings, even when descending from a height of 3,000 or 4,000 feet. "When circling so high up that he sho

but as a dot, he will suddenly close both wings, and, falling like an aerolite, pass through the intervening space in a few seconds of time. With a burst his broad pinions are again unfolded; his downward progress is arrested, and he sweeps away horizontally, smoothly, and without effort. He has been seen to do this when carrying a sheep of twenty-six pounds weight in his talons; and from so giddy a height that both the eagle and his booty were not larger than a sparrow. It was directly over a wall of rock in which the eyrie was built; and while the speck in the clouds was being examined, and doubts entertained as to the possibility of its being the eagle, down he came headlong, every instant increasing in size, when in passing the precipice, out flew his mighty wings; the sheep was flung into the nest, and on the magnificent creature moved, calmly and unflurried, as a bark sails gently down the stream of a river."

**AN ALPINE LAND SLIP.**—The Steinberg cliff, a rocky wall of several millions of cubic fathoms, with all the forest upon it, and the nagelfluh wall of the "Gemeinde Marcht" sinking like a terrace more than 100 feet below, had given way. This was the signal for universal destruction, for then began a tragedy which can be compared to no other phenomenon for its fearful sublimity. In the wildest confusion blocks of rock and splinters of stone, mud and turf, foliage and trees, sometimes whirled up into the air, sometimes, enveloped in clouds of dust, chased each other over the mountain shoulders of the Vale of Gordan. The chaotic fall of the vast masses, the speed of their descent, the universal confusion, increased every moment. Mountain blocks as big as houses, with pines fixed to them, hurried, as if slung by a demon's fist, with three bounds like flying birds, high through the air. Other masses of rock ricocheted like shots from a giant cannonade, striking from time to time only to bound up again into the air. Others were crushed by their companions on their path, and splattered like white-hot iron rods shooting out sparks under the hammer. It was a scene from the Titan's battle of Greek mythology.—*Berlepsch's Alps*.

**AN ELEPHANTINE ACTOR.**—Sir Emerson Tennent, in his Natural History of Ceylon, says the elephant occasionally feigns death in order to regain its freedom. Of a recent captive he writes—"It was led from the corral as usual between two tame ones, and had already proceeded far towards its destination, when, night closing in, and the torches being lighted, it refused to go on, and finally sank to the ground, apparently lifeless. Mr. Cribbs ordered the fastenings to be removed from its legs, and when all attempts to raise it had failed, so convinced was he that it was dead, that he ordered the ropes to be taken off and the carcass abandoned. While this was being done, he and a gentleman by

whom he was accompanied leaned against the body to rest. They had scarcely taken their departure and proceeded a few yards, when to their astonishment the elephant rose with the utmost alacrity, and fled towards the jungle, screaming at the top of its voice, its cries being audible long after it had disappeared in the shades of the forest."

**A WORD ABOUT SERPENTS.**—There is another little serpent, says our old friend, who is painfully active in his movements, and a master of the science of projectile s. He springs upon his prey from beneath shrubs, &c., after having turned himself rapidly round and round upon the ground to obtain that rotatory motion for his flight which alone insures accuracy of aim. He is quite a Whitworth in his way, is this little serpent, the *Acontia*; and brings down his men at twenty cubits distance. The *Paubera* secures his prey with a hook, which is fastened to the end of his tail. He swallows oxen alive and entire, and consequently suffers severely from indigestion on account of the bones. Our old friends the asps, vipers, boas, anacondas, cobras and rattlesnakes, figure in this strange company, and we have many novelties concerning their nature and value. You would not imagine, now, that from vipers "many noble medicines are prepared," and that "a wine from their flesh is singular in consumptive, leporous, and scorbutic cases," or that "they afford also a volatile salt, the most generous cordial in nature." Great is the power of simple things. If ever dear reader, you meet a rattlesnake, don't run away, but get a branch of wild penny-royal; then, having fastened it to the end of a stick, present it to the creature's nose, and if it be only of the family, one of which was so dealt with by Captain Silas Taylor, in the year 1657, it will turn and wriggle, labouring hard to avoid the potent herb, and die in less than half an hour from its mere scent.—*Once a Week*.

**FAIRY RINGS.**—An accidental circumstance occurred to me on a journey to visit the far-famed and beautiful monastery of Batalha, in Portugal. On our road we were overtaken by one of those tremendous thunder-storms incident to hot climates, and which bear no comparison to the slight movements in the elements of our colder atmosphere. Whilst taking shelter from the fury of the storm, the forked lightning struck several objects not far from us. Soon afterwards I observed several rings of smoke and gas floating slowly in the air, which, preserving their circular form, enlarged and diminished alternately until they ultimately settled in that form on the sward before us. In a day or two afterwards, on passing the same spot, I observed on the sward several rings, densely green, two or three inches wide; the grass of which (circumferences or rings) had grown full an inch in that short time, and fungi were beginning to make their appearance. There must have been some very fertilizing property in the gas; and it has struck me that the same may



take place in the new experiments for promoting vegetation by electric rods and wires. In the country I have always observed that these rings make their appearance after thunderstorms; and I never yet met with a better solution of the phenomenon than that which accident afforded to me, as above related. Nor have I ever seen any one who had seen a fungus, or fungi, spring up, and a ring to radiate from it. But I have observed these rings to last for two or three years, and to enlarge, in the course of time, which is not sufficient to establish the truth of the mere theory, that these rings are caused by spawn that radiates from a common centre.—*Gardners' Chronicle*.

**INFLUENCE OF ELECTRICITY.**—The injurious effect of a sudden increase of electricity is very strongly marked upon the young of all animals, the hurtful influence being in proportion to the growth of the victim. Eggs are peculiarly susceptible to the influence of electricity, and, even when the chick is partially matured, are often killed by a passing thunderstorm. In climates where thunderstorms are frequent and violent, as in the lands which are inhabited by the humming-birds, it is needful that the eggs should be protected from the deadly influence, and we accordingly find that the nests are oval or rounded in shape, and are made of substances which are bad conductors of electricity.—*Roughledge's Illustrated Natural History*.

**PEAS WITH POTATOES.**—In a letter in the *Agricultural Gazette*, an English paper states that a single pea inserted into each piece of potato that is planted, will produce a large crop of peas, and tend to check disease in the potato. It is a practice with some to plant peas with potatoes, here. The potato stems answer a good purpose for the pea vines to run upon.

**ONE HUNDRED YEARS AGO.**—In the last part of the eighteenth century appeared, nearly at the same time, the edicts of Turgot for the enfranchisement of labor, and the book of Adam Smith on the nature and the cause of wealth. At nearly the same epoch, Lavoisier laid the foundation of the discoveries which were to transform chemistry; Watt took his first patent for his perfection of the steam engine, and Arkwright obtained a patent for spinning by rolls. These events contain the germ of the principle, and of the means adopted by modern industry. Modern chemistry gave birth to numerous industrial processes; the perfected steam engine furnished a motive force applicable to the most varied mechanisms; mechanical spinning and weaving replaced the ancient mode of manufacturing tissues and multiplied the production of manual labor; finally, the ideas until that time dominant gave place to notions more just and more exact on the nature of wealth and on the means of developing it.

**THE FARMERS AND THE WAR.**—This country would be able to support a very large number of fighting men through an indefinite period of

time if the peaceful industry of the community was directed to this end. It would simply be necessary to divert the labors of those who are no engaged in making superfluous luxuries to the production of food and clothing. This diversion of labor will be gradually effected by a decline in the price of luxuries and an advance in those of the necessities of life. This already begins to be felt; while works of art, books, jewelry, &c., are of a very slow sale, the coarser styles of woollen cloths and satinets have advanced some 30 per cent in price in such colors as are adapted for military purposes. If the community is intelligent, they will anticipate this change in the in the market demand for articles, and will, by a prudent forecast, save us from a scarcity of products absolutely essential to existence. This applies with especial force to farmers. Let them sow their seeds with perfect confidence that there will be a certain demand for their crops, which will bring better prices than in preceding years. Above all things, let us not have the horrors of famine added to the trials of war.—*Scientific American*.

### Editorial Notices, &c.

THE BRITISH REVIEWS FOR JANUARY, 1862.—  
Republished by L. Scott & Co., 54 Gold St.,  
New York.

We have received through Mr. Rowsell, Bookseller of this city, copies of the American Edition of the *Quarterly, Edinburgh, Westminster, & North British Reviews*, commencing the volumes of the present year; also *Blackwood's Magazine* for January and February; for which we take this opportunity of thanking the attentive and enterprising publishers. Referring to the influence of these Reprints on the American mind one of their own critics well observes:—

"The best talent in England is employed upon them, and although the circulation of some of them, is actually less in Great Britain than in the United States, they are to a certain extent the organs of the advanced opinions within their several spheres of influence, corresponding in some degree with the gradations of American sentiment in religion, philosophy, and statesmanship. This fact accounts in some measure for the daily increasing circulation of the British reprints in the United States, and the estimation in which they are held in enlightened and educated circles here. They likewise sound a depth of profound thought comparatively unknown to our literature, and pursue abstract and practical investigations to a point seldom attempted by American critics and reviewers. This quality renders them the more valuable to us, as study which develops the radical diversity in the mental methods of John Bull and Brother Jonathan.

—a study which cannot be closely pursued without a modification to an extent of some of our rapid Yankee characteristics. There is no doubt that the imperceptible mingling of the two nationalities now going on is effecting a favorable result upon both, and nothing will tend to increase the ameliorating process like a free interchange of sentiment through the current literature of Great Britain and the United States. The republication and extensive circulation of the British Reviews in this country has to a great extent effected this object, and through their columns a mutual interest in the affairs of both countries has sprung up and ripened into important and healthy results."

In *British America* how desirable it is that these recognized standards of British Literature, Science and Politics should be extensively known; and we are therefore glad to learn that their circulation of late has been much increased both in Canada and the other Provinces. The views entertained by British writers on the civil war that is now unhappily afflicting the great neighboring Republic, may be readily learnt from these periodicals, which correctly represent the opinions of the various leading parties of the empire. It should be borne in mind that these are not pirated editions; Messrs. Scott & Co., have arrangements with the British publishers for advanced sheets, which enable them to reproduce these invaluable periodicals and place them in the hands of their numerous subscribers throughout this vast continent within two or three weeks after their publication in Britain, and that too, for one third of the original price!

The present is a favourable time to commence subscribing, as the new volumes for 1862 began with the January numbers. The terms per annum for any one of the four Reviews, or Blackwood, are \$3. For any two, \$5; and for the whole only \$10; thus placing the recognised exponents of British learning and statesmanship within the reach of individuals interested in such matters either singly or by clubbing.

### Imported Thorough Bred Cattle FOR SALE.

THE SUBSCRIBER OFFERS FOR SALE, the whole of his lately imported herd of improved Short horns. Full pedigree for each, authenticated by reference to Coates's English Herd Book.

G. W. PHILLIPS,  
Ogdensburg, N. Y.

March 6th, 1862.

4in

## Fresh Garden, Field, & Flower Seeds.

FOR SPRING SOWING.

JAMES FLEMING & Co., Seedsmen to the Agricultural Association of Upper Canada, beg to inform their friends, and the Farmers of Canada generally, that their stock of Fresh Seeds is now complete and very extensive, embracing almost every kind of seed suitable for the country. The stock of Agricultural Seeds is large and well selected. The vitality of each sort is carefully tested, and their genuineness may be fully relied upon. A large stock of Peas, Timothy, and Clover:

Spring Tares,  
" Wheat,  
Black and White Oats.  
Swede Turnips, Purple top.  
" " Green top.  
" " Laing's Improved.  
" " Skirving's Improved.  
White Globe Turnip.  
Yellow Aberdeen "  
" Altringham "  
Waite's Eclipse Turnip.  
Stubble or Six Weeks "  
Mangel, Long Red.  
" Long Yellow.  
" Yellow Globe.  
" Red Globe.  
" New Olive Shaped.  
Sugar Beet.  
Field Peas, several varieties.  
Marrowfats, " "  
Barley, two and four rowed.  
Buckwheat.  
Indian Corn, several varieties.  
Alsike and White Clover.  
American Orchard Grass,  
Kentucky Blue Grass.  
English Rye Grass.  
French Lucern.  
Cow and Rib Grass.  
Carrot, White Belgian.  
" Long Orange.  
" Altringham.  
Parsnip, Hollow Crowned.  
&c., &c., &c.

Also a full and general assortment of all kinds of Garden Seeds: a Catalogue of which, with directions for sowing, can be had on application. Agricultural Societies ordering Seeds, will be supplied on liberal terms. Country Merchants supplied with complete assortments of Garden Seeds on Commission, neatly put up in boxes of 200 papers each, for retailing at five cents a paper. Also a large assortment of Flower Seeds, embracing the novelties of the season.

No. 126 Yonge Street, Toronto.

March, 1862.

4-t.



**Agricultural, Horticultural, &c.**

The following Books on these subjects to be had at

BAIN'S BOOK STORE,  
46 KING STREET EAST.

|                                           |        |
|-------------------------------------------|--------|
| Dadd's Modern Horse Doctor, cl.....       | \$1 00 |
| Do. American Cattle Doctor, cl....        | 1 00   |
| Greenon's Treatise on Milch Cows. cl. .   | 60     |
| Mayhew on the Horse, 8mo.....             | 2 50   |
| Youatt & Martin on Cattle, 12mo.....      | 1 25   |
| Youatt & Spooner on the Horse.....        | 1 25   |
| Clater's Cattle Doctor, 12mo.....         | 1 25   |
| Clater's Farriery, 12mo.....              | 1 25   |
| Stewart's Stable Economy, 12mo.....       | 1 00   |
| Miles on the Horse's Foot.....            | 50     |
| Thomson on the Food of Animals.....       | 75     |
| Dogs and their Management by Mayhew.      | 63     |
| Milburn on the Cow.....                   | 25     |
| Martin on Cattle.....                     | 38     |
| Youatt on the Horse.....                  | 25     |
| Martin on the Sheep.....                  | 25     |
| Dayle on Domestic Poultry.....            | 1 50   |
| Watts on the Poultry Yard.....            | 25     |
| Pigeons and Rabbits by Delamee.....       | 25     |
| Martin on the Pig.....                    | 25     |
| Boussingault's Rural Economy.....         | 1 25   |
| Dama's Muck Manual.....                   | 1 00   |
| Sibson's Agricultural Chemistry.....      | 38     |
| Johnston's Agricultural Chemistry.....    | 1 25   |
| Johnston's Elemens.....                   | 1 00   |
| Burn's (R. S.) Hints for Farmers.....     | 25     |
| French on Farm Drainage, 12mo.....        | 1 00   |
| Flint on Grasses.....                     | 1 25   |
| Langstroille on the Honey Bee.....        | 1 25   |
| Neil's Fruit, Flower and Vegetable Garden | 1 00   |
| Bridgeman's Kitchen Garden.....           | 60     |
| Buist's Family Kitchen Garden.....        | 75     |
| Fessenden's American Kitchen Gardener     | 25     |
| Thomas' American Fruit Culturist.....     | 1 25   |
| Field on Pear Culture.....                | 1 00   |
| Barry on the Fruit Garden.....            | 1 25   |
| Coles' American Fruit Book.....           | 50     |
| Allen on the Grape Vine.....              | 1 00   |
| Chorlton's Grape Grower's Book.....       | 50     |
| Leuchars on Graperies.....                | 1 25   |
| Saunders' Orchard Hons.....               | 40     |
| Pardee on Strawberry Culture.....         | 60     |
| Buist's Flower Gardener's Directory....   | 1 00   |
| Breck's Flower Garden.....                | 1 00   |
| Johnson's Lady's Flower Gardener.....     | 25     |

Any of these Books can be sent by Post to any part of Canada, upon remitting the price and at the rate of 20 cents on the Dollar for postage.

Toronto Feb. 28, 1862.

4 t.

**FOR SALE.**

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,

Dover Court.

Toronto, Aug., 1861.

**BOARD OF AGRICULTURE.**

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

Toronto, 1861.

HUGH C. THOMSON,  
Secretary.

**of Co-Partnership.**

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

**NOTICE.**

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

**FOR SALE.**

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several *pure Durham bull calves* to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the well known *DUCHESS* tribe, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—First come, first served.

Waterdown, Nov. 14, 1861.

4-t.

**THOROUGH BRED STOCK FOR SALE.**

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

JOHN SNELL,

tf.

Edmonton, P. O., C. W.

## VETERINARY SURGEON.

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

## FOR SALE.

A FEW PURE-BRED SOUTH-DOWN RAMS  
and Ewe Lambs, from

## IMPORTED STOCK,

Selected from the Best Flock-dealers in Dorset,  
Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

JOHN SPENCER,  
Brooklin, Post Office,  
Ontario County C. W.

Oct. 12th, 1861.

THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co.,  
King Street East, Toronto.

## FOR SALE.

**A** LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

## Contents of this Number.

|                                              | PAGE. |
|----------------------------------------------|-------|
| The Cultivation and Preparation of Flax.     | 161   |
| Elgin Flax Association.                      | 167   |
| The Agricultural Statute—Proposed Amendments | 168   |
| Growth of Different kinds of Wool.           | 176   |
| Changes of the Atmosphere                    | 179   |
| The Parsnip                                  | 180   |
| Cutting Seed Potatoes                        | 180   |

## AGRICULTURAL INTELLIGENCE:

|                    |     |
|--------------------|-----|
| Shows this Spring. | 181 |
| Italian Pigs       | 181 |

## HORTICULTURAL:

|                                        |     |
|----------------------------------------|-----|
| Dwarf Standard Fruit Trees             | 181 |
| On the culture of the Vine in Open Air | 182 |
| Tree Wounds                            | 184 |
| Wild Vine                              | 184 |
| A Spring Tart, Rhubarb                 | 184 |
| Keeping Celery in Winter               | 185 |

## DOMESTIC:

|                           |     |
|---------------------------|-----|
| Hints for clear Starching | 185 |
|---------------------------|-----|

## VETERINARY.

|                  |     |
|------------------|-----|
| Pleuro-Pneumonia | 186 |
|------------------|-----|

## MISCELLANEOUS:

|                                                                               |     |
|-------------------------------------------------------------------------------|-----|
| A Chapter on Clouds                                                           | 186 |
| Descent of the Eagle                                                          | 187 |
| An Alpine Land Slip, An Elephantine Actor, A Word about Serpents, Fairy Rings | 188 |
| Influence of Electricity, One Hundred Years Ago, The Farmers' and the War.    | 189 |

## EDITORIAL NOTICES:

|                                      |     |
|--------------------------------------|-----|
| The British Reviews for January, &c. | 185 |
|--------------------------------------|-----|

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE

# Canadian Agriculturist,

OR

## JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA.

VOL. XIV.

TORONTO, APRIL 1, 1862.

No. 7.

### The Cultivation and Preparation of Flax.

(Continued from page 167.)

*Conversion of the Straw into prepared Fibre.*—The first operation is that of separating the seeds from the stems, a process termed “ripping,” which is effected by drawing the heads of the sheaves through a stout ripple, or comb, firmly fixed on the centre of a bench or form, which allows of two persons to work at the same time. This is best performed when the flax is fresh from the field, but when the straw is dry and rigid by keeping, the seed-bolls are best separated by a “beater,” which prevents the fibre from being broken and injured, when used with care.

Various processes have been adopted for reducing the straw to prepared fibre, but they may all be classed under two heads; the *mechanical*, in which the operations are conducted in a *dry* state, and the *chemical*, in which moisture and temperature are more or less necessary. In the first the object is obtained by the different parts being mechanically separated from each other without any changes being effected; in the latter, the plant itself is disintegrated, either by the action of fermentation, which destroys, or of some solvent, which merely abstracts the cementing matter by which the several parts of the straw are held together. The dry or mechanical method can only be applied with advantage in case of inferior straw, and for coarse goods not requiring to be bleached, as canvas,

rick covers, rope-yarns, &c. The *chemical* or wet process “is effected in three different ways, in each a different principle is involved. The *first* is that where the separation is effected by simple fermentation, known as “steeping;” the *second*, where it is due to the abstraction of the nitrogenized extractive compound by the agency of chemical solvents; the *third*, where simply water, either heated or in the shape of steam, is made use of for the same purpose.’ In the first, which is the oldest and still the most prevalent system, a destructive fermentation is carried on, either slowly or rapidly, according to the temperature of the water in which it is steeped, at the expense of the extractive matter of the plant, and offensive and noxious gases are generated; in the second, this matter is removed by the aid of chemical ingredients, which are costly, and never altogether efficient in their action; while, by the third, the separation may be effected without any chemical changes taking place in the composition of the plant, and all its several parts be left in an available condition.

The following description of the modes of preparing flax for manufacturing purposes as practised in the British Islands is taken from a Report of Mr. A. Kirkwood, who was deputed by the Canadian Government in 1854 to visit Europe with a view of ascertaining the most approved methods of growing and preparing this invaluable plant. Some subsequent improvements in matters of detail have been made,

but it is believed that the leading principles, remain substantially the same :—

Flax-straw with the seed on is purchased from the farmer at a fixed rate per ton; it is sometimes sold out of stock, but it is better if it has been stacked for a short time, as there is less risk of heating when built in large stacks, and also less loss by drying. Some large concerns have lost from the last item alone as much as £300 per annum.

Each farmer's straw is kept separate from others in its different stages, viz :—Stacking, seeding, steeping, drying, and scutching. By this means its loss by seeding, and the yield of fibre can be more readily determined, affording to the purchaser a criterion for his guidance in future years.

Round stacks with ventilators in the centre are preferred, the whole resting on cast metal pillars (Fig. 1) with inverted dish shaped caps of the same material. These prevent injury being done to the straw, by rats or mice.

All extensive factories of the kind under consideration have rail-roads for trucks radiating from them in different directions. Among these one to the stack yard, with a view to the easy and rapid carriage of the straw to the seeding-house.

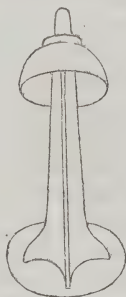


Fig. 1.

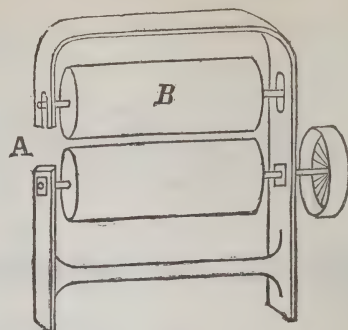


Fig. 2.

It is again weighed and the loss in stack ascertained. The seed is taken off by means of cast iron rollers, (Fig. 2) making twelve revolutions per minute. They are solid, nineteen inches in length and twelve in diameter. A handful of straw is taken by the operator and the seed end passed between the rollers at A, the root end being firmly held by the hand.—This is repeated three or four times, and the bolls are sufficiently crushed. The roller B, is free to move upwards.

A different apparatus for seeding has been described on a previous page.

Seeding in winter is a constant operation.—The greater the quantity sold to farmers for sowing the greater is the profit, as the price for crushing purposes is less.

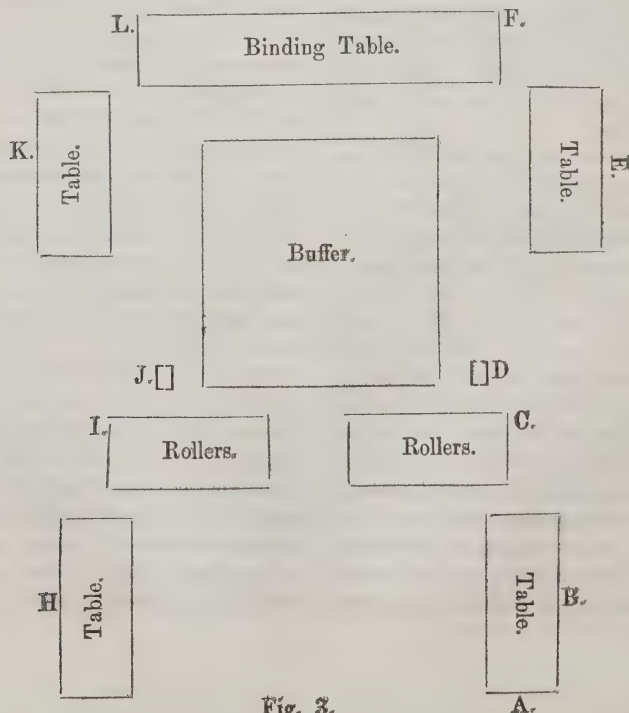


Fig. 3.



In factories working twelve vats, two sets of seeding rollers will be required. A ground plan of arranging these and their accompaniments is represented by Fig. 3.

A little girl, A, opens the bundles of straw, passes them to B, who divides them and gives them to the seeder C. She places them on the square table from which they are taken by D, whose duty it is to pass the seed end through the buffing machine to separate the chaff.

This is a covered cylinder, three feet in diameter, and five feet in length, making one hundred and thirty revolutions per minute. On its circumference are six rows of wooden teeth, each twelve inches long, and distant from each other one a-half inches at base.

E, either straightens the root end by hand, or

puts a loose bundle in the machine for the purpose, from which it is taken by F, and bound.

The same routine is performed on the opposite side.

If more straw is seeded than is required for steeping, it is re-stacked.

Six tons of straw with the seed on may be done by two sets of rollers per day, at a cost of two shillings and ten pence per ton.

All the seed, chaff, and uncrushed bolls that come from the seeding rollers are passed through a machine, (Fig. 4,) having two sieves. The wires in sieve A, are about  $\frac{5}{16}$  of an inch apart, those in sieve C,  $\frac{1}{16}$  of an inch.

The flax-seed, chaff, and sand fall through it, upon the shuffle-board B, which delivers them to

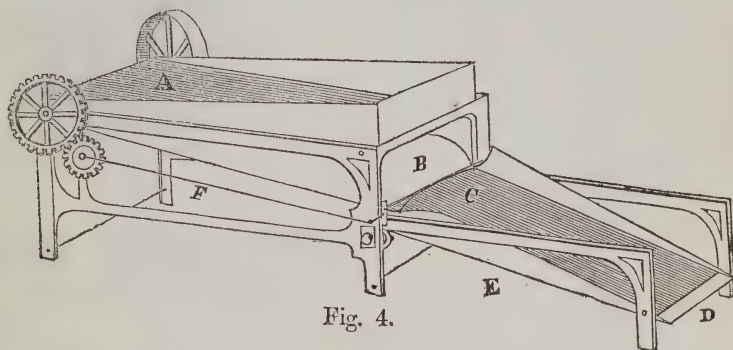


Fig. 4.

C, through which all the seed and fine dust fall at E. The chaff passes over to the floor at F. A cam gives motion to it, causing it to rise and fall with a jerk. A horizontal motion is given to B by the crank-rod F, worked by the pinion G. C has a motion similar to A.

The uncrushed bolls separated by the sieve A,

are either crushed, or sold to farmers for feeding purposes at one shilling and two pence per bushel. The chaff is worth from two pence to four pence per bushel.

An arrangement is made at E, (Fig. 4,) by which elevators raise the seed to the hopper A, (Fig. 5.)

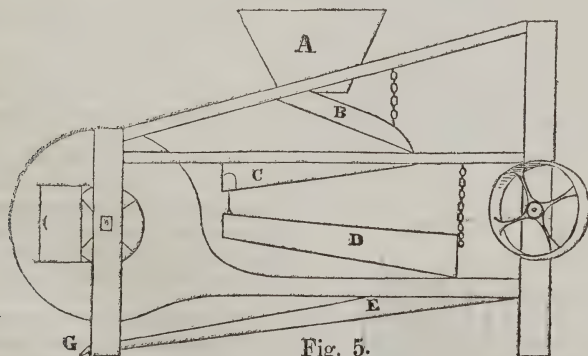


Fig. 5.

In this side view of the fanners are represented two shuffle-boards (B, D,) having a horizon-

tal motion from cranks, and two sieves (C, E) moved by cams. The sieve C is made of par

let wires, and E of perforated zinc. The blast from the fanners passes at F as the seed drops from D to E.

The seed is bagged at G, or spread on the floor.

The average yield of clean seed from a ton of unthrashed straw is about five bushels, of chaff, eighteen, and of bolls, three bushels.

Other machinery for the same purposes as those here treated, may be found in operation.

Steeping is the next step, or it may be that some prefer steaming. Up to this point the processes are common to both systems, but now the similarity ceases.

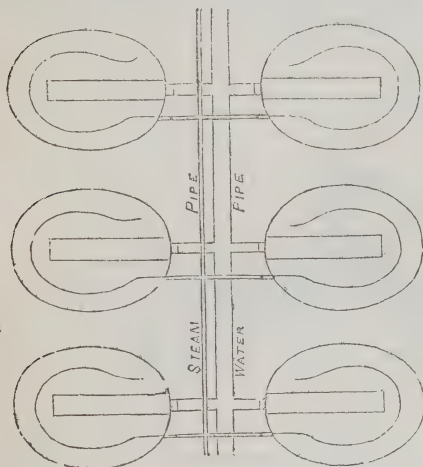


Fig. 6.

I will notice here, the method of Schenck.—Fig. 6 is a ground plan of six vats, showing also, the steam-pipe and water-pipe. Water is admitted by this pipe from a reservoir or tank on a higher level than the surface of the vats. This is heated by steam, to any required temperature.

Vats (Fig. 7,) are generally made of 2½ inch plank, 6 ft. 8 in. in depth, 9 ft. 6 in. in transverse diameter, and 13 ft. 6 in. in longitudinal diameter. They have false bottoms covering the steam coil: and covers represented as put together by Fig. 8.

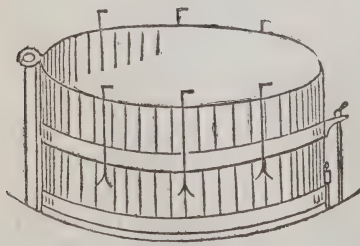


Fig. 7.

To fill a vat, three or four beets of flax-straw are placed on their side, in one end. A row of beets is then put across the vat in the direction of its shorter diameter, and resting on their root ends, in a somewhat inclining position.—Another row, but inverted, is placed against this, and so on till the opposite end of the vat is reached. The division floor is then put on, and a like quantity of flax-straw placed on top. The cover is then firmly secured in its place.

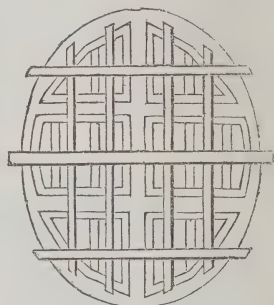


Fig. 8.

We have seen that water can be admitted at any required temperature. That at present most desirable, is 90 degrees Fah.

| A   |    | ° 267 |    |    |    |
|-----|----|-------|----|----|----|
| ApL | 6  | 9     | 12 | 3  | 6  |
| 15  |    |       |    |    | 90 |
| 16  | 90 | 90    | 89 | 89 | 89 |
| 17  | 90 | 90    | 89 | 89 | 89 |
| 18  | 88 | 88    | 88 | 87 | 87 |

Fig. 9.

That the minute attention paid in some establishments, to this particular part of the process may be seen, I give a form of board in use, (Fig. 9,) one of which is placed opposite each vat.

A, tells where the flax was grown: The number 267 indicates the number of times this individual vat has been filled since the beginning of the year; 15, &c., in the margin denote the days of the month, and the figures opposite are the temperatures, which are taken and recorded every three hours, as at 6, 9, 12 o'clock, &c.



We will suppose that water at 90 degrees has covered the straw in the vat, and that the supply has been checked. Fermentation ensues, and carbonic gas begins to be evolved four hours afterwards. The flax stems-well, and water is forced into the overflow pipe. A white froth

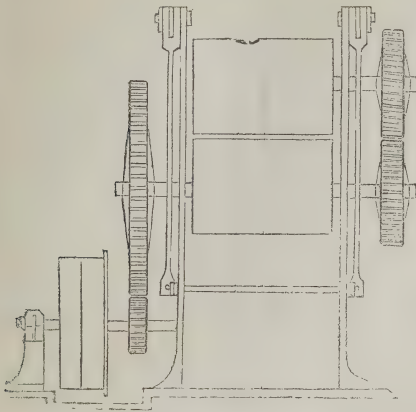


Fig. 10.

and scum now appear on the surface, and gather as the evolution of gas increases. The water is changed in color and taste. Hydrogen must also escape, as the application of a light ignites the whole surface of the water in the vat.

Sufficient water at 90 degrees is now admitted, to cause an overflow, which removes impurities, and leaves the flax in a fairer condition.

If the temperature falls too low, steam is easily let on to raise it to the required temperature.

Before the introduction of wet rolling, flax-straw was steeped for sixty and seventy hours. This improvement, with judicious management, has reduced the time to forty.

When fermentation has proceeded far enough, the vats are emptied, and the straw is immediately rolled. Before being caught by the rollers (Fig. 10) jets of pure water from a pipe above the feed table, fall upon it with a cleansing effect.

After passing the first pair, it is taken by a second and a third, between which it may be turned. Much of the epidermis is thus removed, thereby facilitating the subsequent processes of drying and scutching.

A system of levers is applied to each pair of rollers, which may be understood by a reference to Fig. 11.

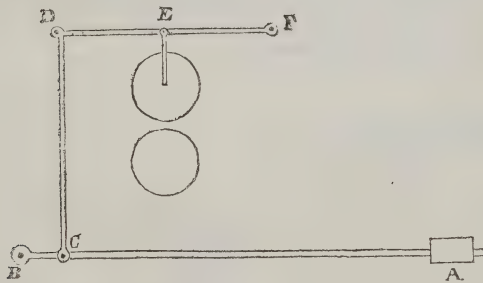


Fig. 11.

The weight A, equals 124 lbs. Its distance from the prop B, is 43 in. and the distance of the power C, from the prop is 3 in., therefore  $\frac{124 \times 43}{3} = 1777$  lbs., the power. Calling this power the weight in the upper lever, its distance from the prop F equals 17 in., and the distance of the power E, from the prop is 9 in., therefore  $\frac{1777}{9} = 3356$  lbs., the pressure on the flax as it passes through each pair of rollers.

All kinds of flax will not bear the same amount of pressure. This however, is easily graduated by moving the weight A, nearer the power C.

As the flax leaves the rollers it may be treated in different ways which are described in order.

The first is field drying, which is by far the best, if sudden changes of weather were not to be encountered. Even with this drawback it must not be overlooked.



Fig. 12.

A woman puts a band round the top of a bundle of Flax after it leaves the rollers; these are laid on a truck, and carried by rail to the field. They are dexterously set on end in a sugar-loaf form (Fig. 12) and known as rickles. In some retteries, the bands are taken off, and the ends opened. When perfectly dry, they are bound and put in stacks.

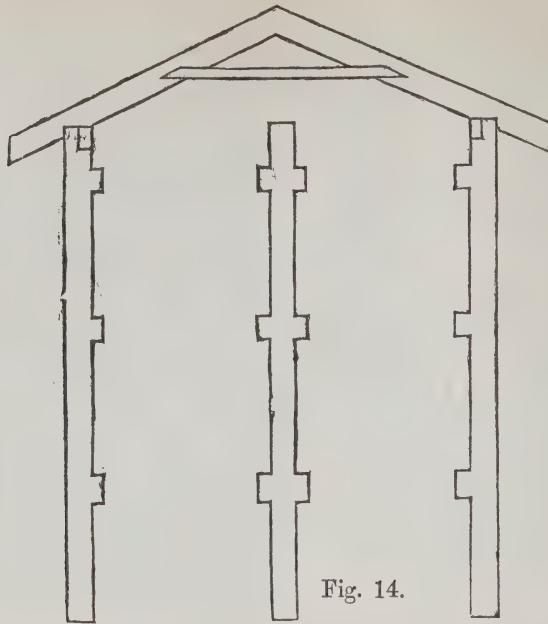


Fig. 14.

But Flax may be put in holders as it come from the rollers, and dried in sheds in the field, or by hot air in the drying-house.

Holder are made of two pieces of wood of various lengths, on the end of one of which are two rings of wire, which, when drawn

over the ends of the other, hold the Flax evenly spread.

An end view of a drying shed is represented by Fig. 13, in which there are two rows with three tiers in each.

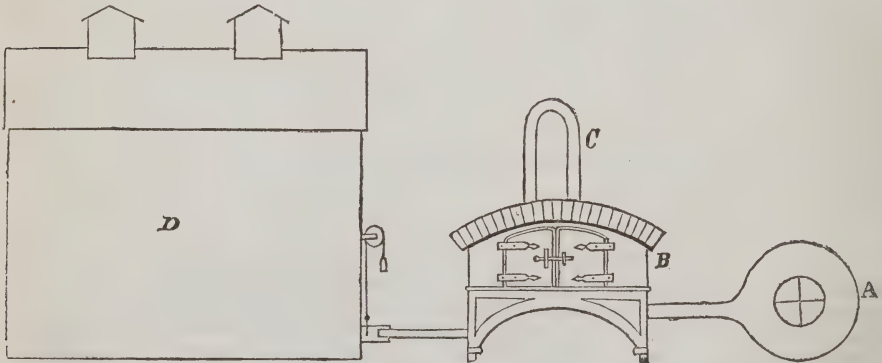


Fig. 14.

The next method of drying is by stove, in what are sometimes termed desiccating houses. These can be at work at all times, thereby enabling the manufacturer to control his own operations. But it has been observed that Flax thus dried is somewhat deteriorated in quality.

Two methods of hot air drying are in use, each of which merits a separate notice.

In Figure 14, A represents fanners which

drive cold air, through a range of pipes (C) only one of which is here shown. The flame from the fire in B passes among these pipes, bringing them to a red heat. The air, in its passage through these, is necessarily warmed, and enters the drying house (D) at a temperature of 140 degrees. Here flax is dried in from eighteen to twenty-four hours. Much fuel is used by this method.



The stove represented by Fig. 15; consists of twenty-one pipes arranged horizontally in three rows of seven each. They are six feet in length,

underneath,, but separated from them by bricks, is a fire of coke. The arrows, Fig. 16, show the course of the flame.

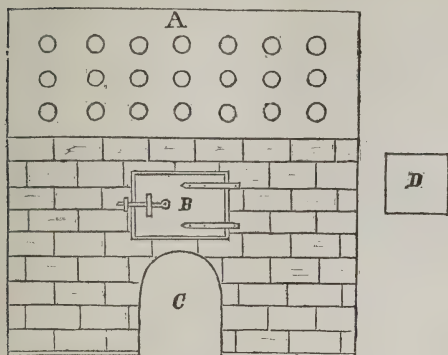


Fig. 15.

In Fig. 15, A shows the ends of the tubes, B the fire, C, the ash-pit, and D, the cold-air flue. The air admitted by this flue circulates among the pipes, is heated there, and escapes through an aperture above them into an iron

chamber on the floor of the drying house, which it now fills.

Drying-houses generally admit three tiers of Flax in height, and six rows in width. Rows of studs are set up, reaching from floor to ceiling.

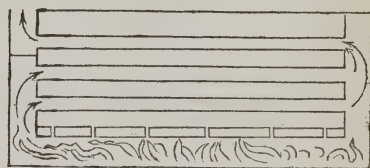


Fig. 16.

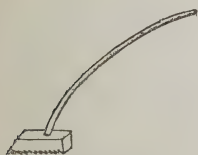
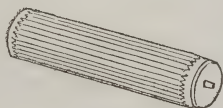


Fig. 17.



18.

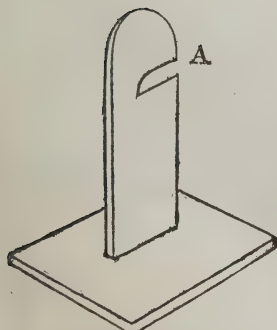
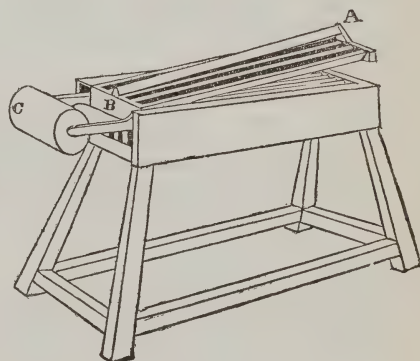


Fig. 21,

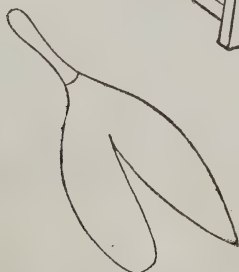


Fig. 20.

Horizontal bars are nailed to these in a longitudinal direction, on which the holders are suspended. The apartments are air-tight above. The only means of escape for the air as it becomes charged with moisture, being by descent to apertures in the floor leading to shafts, and up these to ventilators in the roof.

All Flax, after drying, improves by stacking. Technically speaking, it *comes*. Temporary sheds answer every purpose, if the roofs are water-tight.

The next operation, in order, is scutching.—The straw, in its passage to the scutching-room, is again weighed, and the loss by steeping and drying ascertained.

Before scutching, it is usual to pass the Flax-straw through a breaking machine. Since the introduction of wet-rolling, and scutching machines, this has been partially discontinued.

The simplest form of break is of a mallet shape, (Fig. 17) and is much used in Belgium.—The Flax is broken by successive blows from its serrated surface.

Another form of hand-break is represented by Fig. 18. which consists mainly of two sparred frames, the upper movable on an axis at B, and the lower fixed. It is so constructed that the bars in the lower frame fit between those of the upper. The operator takes hold of the implement by the left hand at A, and with the right places some flax over the lower frame; the upper frame is then lowered, thereby breaking the woody portion of the stems. The flax is successively brought forward and broken until ready for hand scutching.

Breaking in retteries is better done by machinery than by hand. Fluted rollers of wood or metal are mostly used. One of these is represented by Fig. 19. Four or five pair of these work in a machine, one above another in each pair. The flax is fed from a table, and caught between the first pair, then by the second, third, fourth, and so on in succession.

These rollers are seven inches in diameter.—The teeth of the two first pair project an inch, and are severally one and a quarter, and one inch distant from breaking edge. Those of the three last pair project a little more than half an inch and are three fourths of an inch apart.

The first pair revolves a little slower than the second, the second than the third, and so on. Pressure is given and regulated by weight.

Hand scutching of flax is still a very common practice; but it is tedious and expensive on the whole. The simplest apparatus for the purpose is represented by Figs. 20, and 21. The former is the flat blade or sword, with its balancing point, and the latter is the stock, in a slit in which A, a handful of flax, is held by the left hand of the operator, and struck by the scutcher in his right. New surfaces of the flax are presented to the blade, till all the wood is beaten out, and it is perfectly clean.

After flax is broken it is stricked, that is, made into stricks for the scutchers. A strick is as much flax as one hand can grasp, evenly arranged, and slightly twisted. One girl stricks for two scutchers.

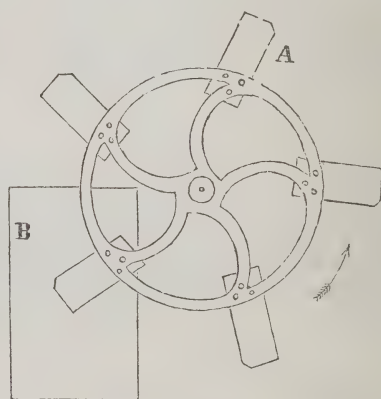


Fig. 22.

In mill scutching several wheels are fixed on a shaft distant from each other three feet or more. It will be seen by Fig. 22, that scutching blades of wood or metal, are screwed to the periphery of these wheels. Upright pieces of metal (B) called stocks, are so placed, that the blades as they revolve pass near their surfaces.—The tops of these stands are sometimes on a level with the shaft, and sometimes higher.—The blades are  $\frac{6}{8}$  inch, and  $\frac{7}{8}$  inch from stock at striking point, and  $\frac{4}{8}$  and  $\frac{5}{8}$  at heel. Wheels are three feet six inches in diameter.

A boy supplies each scutcher with straw, weighs each bundle before delivering it, and enters the quantity against his name. This is a simple form of entry.



| Name. | Straw. | Flax. | Yield per cent. |
|-------|--------|-------|-----------------|
|       |        |       |                 |

Fig. 23.

The quantity of scutched flax done by each workman per day is weighed, the percentage of fibre from the straw calculated, and the comparative merits of the several scutchers ascertained. Scutching-wheels make from two hundred to two hundred and fifty revolutions per minute.—They are covered in to prevent dust and accidents.

It was before noted that scutching machines are now made which do away with skilled labour.

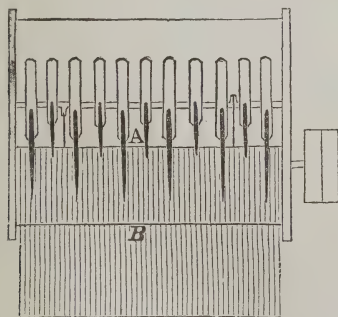


Fig. 24.

A large per centage of codilla, or more commonly, tow, is made in scutching. Different methods are in use to effect the separation of

the shove or woody stem. Tow machines are a substitute for hand-picking. Fig. 24 gives a front view of one of these. The wooden arms A, which project in front, are alternately raised and depressed by cranks on their respective axles, connected by rods with others on the driving shaft below

The alternate striking of the tow by these arms has the effect of separating the shoves which fall through the wires B. These shoves are commonly burned and the ashes used as manure.

Tow, like flax, varies much in quality. There are A 1, A 2, B, C tow, &c. A 1 comes from the sorters', A 2 from the scutchers' bags; B and C are the codilla from the machine.

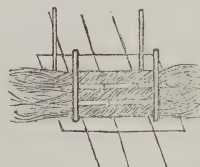


Fig. 25.

Flax is taken from the scutchers to the sorting-room. Here it is sorted into first, second, and third qualities, each determined by the judgment of the workman. It is commonly

made up in bundles or stones of fourteen pounds each. One method is represented by Fig. 25, in which the sorter lays the stricks lengthwise over three bands, with which the bundle is tied when finished.



Fig. 26.

By another method a twist is given to the strick. It is then doubled at the centre and the two ends brought together as in Fig. 26. A band is then passed round their twisted ends, making them ready for bagging. Two hundred weight are put in each bale, or sixteen stones of fourteen pounds each. The flax is now ready for market.

A store room for flax is no unimportant part of a flax factory. If flax is kept too dry it loses in weight and quality. It should be closely packed together in a dark and damp apartment.

Flax has now been brought to that state in which it is purchased by the spinner. But before saying anything of spinning, a description of Watt's chamber for steaming will serve to complete the routine of flax preparation.

It has been before observed that the only point of difference at the present day between the system of Schenck and that of Watt is, that in the former, fermentation at a high temperature is its main feature, while in the latter, the chief characteristic is maceration without fermentation. To Watt, however, is due the extensive introduction of wet-rolling.

A chamber, of which Fig. 27 is a section, may be described as a hollow, air-tight vessel, made of cast iron plates. It is about twelve feet in

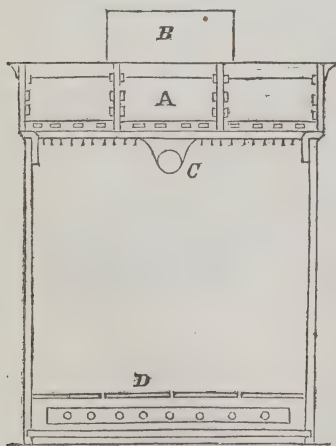


Fig. 27.

length, six feet in width, and six feet in depth, including the space between the false and true bottom, which is about nine inches in depth; but not including the condensing cistern, (A,) on the top of the chamber, which is sixteen inches.

The hot water cistern, (B,) set in the condensing cistern is three feet square. A tube, (C,) in the interior of the chamber and running lengthwise is connected with it, by which the chamber is two thirds filled with liquor immediately before steam is admitted.

In the interior of the chamber we find the steam-pipe between the false and true bottom pierced with holes to allow the escape of steam. Above the steam-pipe is the false bottom (D,) consisting of perforated plates, supported by a frame work on feet; also a bar connecting the two sides of the chamber to prevent their expansion or collapse.

On the outside of the chamber are found an air-valve, for the admission of air when steam is shut off, two cocks to indicate the quantity of water in the chamber; and two doors, one in each end opening outwards, each 2 feet 5 inches square. These are used for filling and emptying, and are screwed up and made steam tight by a gaskin of tow. There is also a pipe for admitting steam to the chamber, exhaust steam from the engine is used,) and another for the escape of the steep liquor. Surplus steam escapes by a safety valve on top.

When flax is ready to be taken out of the chamber, the steep liquor is drawn off into an underground cistern, and there mixed with the overflow from the condensing cistern with a view to its future use in other chambers. The same regard is not had in practice for a condensing surface on top of the chamber as the theory of Watt's system exhibits.

The test by which flax is known to be sufficiently steamed, is the easy separation of the epidermis between the finger and thumb. All subsequent operations in this system, as rolling, drying, scutching &c., resemble those already described, and require no separate notice.

Figure 28 represents a ground plan of a Flax Factory on the system of Schenck. A is the boiler-house; B, the engine room; C, the scutch mill; D, the seeding house; E, the steeping house for the vats; F, the wet-rolling house; both of which are under the same roof; G is the tow-room; H may be used as a store-house; I is a workshop; J and K are drying houses; N is the reservoir which supplies the establishment with water, among other things the tank L, in which water may be heated by steam for the vats; and M is the stove.

Grounds for a stack-yard and drying field are usually attached to a rettery of this description.

Flax passes from the rettery to the store of the spinning-mill, from which it is selected and roughed. The finer qualities are taken to the flax-breaker, where the ends are cut off. These are called cut-line, and are spun to low numbers

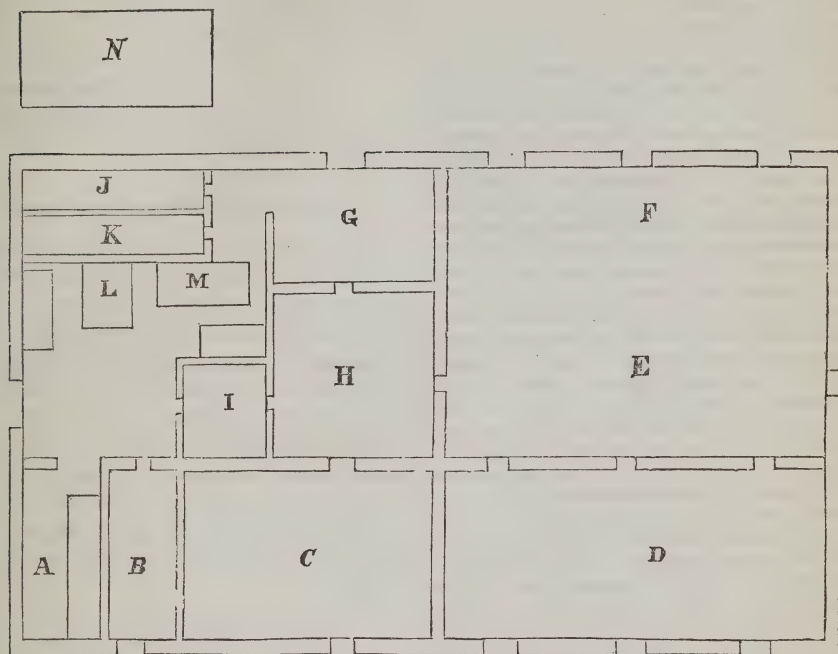


The remainder is called long-middles. The object of cutting is to remove all scabs and impurities which generally exist in the ends of Flax.

After cutting, it is hackled by machinery and taken to the sorting department, where it is selected for different numbers, either for warps or

wefts according to the judgment of the operator.

The tow from the hackling machines is carded and spun to 40 s. and 50 s., for coarse fabrics, as towels, sheetings, &c. It is called first, second and third machine tow.



[Scale 40 feet to the inch.]

Fig. 28.

Flax, after dressing, is taken to the spread board, where the cut-line is spread in four slivers. These are seized in the retaining rollers, and afterwards caught on the reach by the gill. The reach is the distance from the retaining to the delivering roller. This varies according to the quality of Flax worked. The delivering roller makes from twenty to thirty revolutions for one of the retaining, thereby drawing the sliver twenty or thirty times.

Four slivers are united into one, and receiving in a can holding a certain quantity, which is announced by the ringing of a bell, when the can is doffed. The cans so doffed are put up for a second drawing behind another frame, pass over the reach as before, are drawn twelve times, and twelve slivers united into one or two. We have now  $12 \times 20 = 240$ .

These slivers are taken to the third drawing frame, where the same process is repeated, that is, again drawn out twelve times, therefore  $12 \times 240 = 2880$ , which is the number of times the original sliver has been extended.

The cans are now set behind the roving frame,

where the sliver passes over the reach, and is delivered on a bobbin, receiving a twist from the flyer.

Bobbins from the roving frame are taken to the spinning frame. Here they pass through troughs in which water is heated from 100 degrees to 150 degrees by steam, thence to fluted rollers, the reach of which is longer or shorter as the sort spun is finer or coarser.

Finer numbers receive more twists than coarser.

Yarns pass from the spinning to the reeling room. Reels are 90 inches in circumference; each contains 20 hanks, each hank 12 cuts, and each cut 300 yards.

These yarns are taken to the drying loft, and subjected to a high temperature, and when dried made up into bunches for market. Here I will leave them, merely remarking that they are now ready to appear as a textile fabric; assuming the appearance of ordinary linen, or a damask table cloth. In either case before showing themselves in the warehouse of the merchant, they must undergo the operation of bleaching, which itself supports large manufactories.

### Flax Culture.

In a late number of the *Toronto Globe*, we find another letter from Mr. Donaldson on this subject, which contains some additional information to that embodied in former letters. Mr. Donaldson says :—

Canada should turn her attention at once to this subject, and embrace the opportunity of growing every acre the farmer can put in, as it is in contemplation, with several capitalists here, to put up machinery in Canada, the moment there is sufficient flax grown in the country to warrant them in this undertaking. Now that the Spring is at hand, and the Scutching Mills are already on your shores, ordered by the Canadian Government, parties wishing to try them should make application, without loss of time, to the head of the Bureau of Agriculture, Quebec—the machines having no doubt, reached Toronto before this. The cost of cultivation should not deter the Canadian farmer from making the trial of a few acres, as there is not an acre of flax raised in Ireland that does not cost from six to seven pounds sterling—including seed, rent, taxes and labour—before it is ready for our market, and farmers this season, where they have been at all fortunate in getting a fair crop, realized from £80 to £90 a ton, and many of them a great deal more. The quantity of seed sown to the acre should not be less than 2 bush. of 56 lbs., as it is an advantage to have it thick enough to have the fibre evenly and of the same grist. If farmers are not convenient to a mill, they can put the straw in the barns, sheds, or stack it up, after it has been grassed, and the longer it is kept in this state the better the fibre becomes. It is highly recommendable to farmers in the western part of the Province, where more flax growers are than any other place, to endeavour to pull a portion of it before the seed is ripe, as in this state most of the flax that brings the best prices is harvested. The ground should be in good tilth, after having it well ploughed and harrowed, and above all things clear of weeds, then it should be rolled, then the seed sown, then harrowed with a light seed harrow, again, and lastly rolled. Often farmers here sow their clover and grass with flax, as they find in pulling, the flax helps to mould the young clover plant, and seldom, if ever, you will see patches missed, which is often the case with either barley or oats. Farmers in the country who have not much experience in the culture of flax, should go to Norval, Township of Esquesing, or to Canestoga, county of Waterloo, and they will see for themselves the process carried on, both in the cultivation and preparation for the market, by the milling and manufacturing carried on at both these places; and in the place of being able to realize \$15 to \$16 an acre in

growing fall wheat, and less at the present prices of other spring grains, they will get from \$30 to \$40 clear out of flax, and twice that when they come to understand the steeping and handling thoroughly, as they do in Germany, Belgium, Switzerland, or any flax growing country.

Hoping to hear of a flax association being formed immediately in Canada.

I am, dear Sir,

Your obedient servant,

J. A. DONALDSON,

Canadian Government Emigration Agent.

Belfast, March 6, 1852.

### The Flax Scutching Machines.

The Flax Scutching machines imported by order of the Canadian Government, from Ireland, of which a cut and description are given at page 99 of this volume, have arrived, and are at the date of writing, at Toronto. Of the six machines imported, three are to be placed in Lower Canada, and three in Upper Canada. Of these, one is presented to the Board of Agriculture in each section of the Province; to be used under their direction and control. Of the two remaining mills for Upper Canada, one is for the present to be placed at London, and one at Kingston.

### The Composition &c. of Milk.

[We have much pleasure in presenting to our readers the subjoined lecture on Milk, delivered by Professor Voelcker, the Chemist to the Royal Agricultural Society of England, at a weekly meeting of the council, held in March 12th.—Eds.]

#### COMPOSITION OF MILK GENERALLY.

Milk is essentially an emulsion of fatty particles in solution of *caseine*, or curd, and milk-sugar. The fatty matter of milk, however, is not contained in it in a free condition, but enclosed in a little cell, consisting of the very identical substance which, in a state of solution, exists in milk, and which is participated when milk gets sour. In other words the butter, or the fatty portion of the milk, is encased in curd. I have here some milk globules, and they are of different sizes in different species of animals, and even in animals of the same kind they vary from the 1-2000th to the 1-4000th part of an inch. They are generally round, but sometimes are slightly egg-shaped. The yellow spots represent some of the epithelium cells which are generally found in minute quantities even in sound



milk. In addition to the substances just mentioned, milk invariably contains a certain portion of mineral water, and it is important to notice that this mineral matter consists essentially of the same materials of which the incombustible part of bone is composed. The ash of milk is rich in phosphate of lime and phosphate of magnesia, or bone earth. Butter, curd, milk-sugar, and mineral substances are the normal constituents of milk. In diseased milk, we find a number of accidental matters which cannot be identified by any chemical test, but may be well identified by means of the microscope. In diseased milk, pus, or common matter, generally manifests itself under the microscope, but even the microscope is not sufficient in all cases to prove whether the milk is wholesome or not, or whether it is conducive to the health of animals or the reverse. In many instances the constituents of food, or any substances which have a decidedly medicinal effect; pass rapidly into the milk, and confer the medicinal, properties upon the milk which the remedies themselves possess. Thus, if an animal takes castor oil in considerable quantities, the purgative effects of the oil pass into the milk. Colouring matter, the red colour of madder, and the blue colour in indigo, the common weed *mercurialis annua* and *polygonum aviculare*, likewise pass into the milk and colour it. There are also, no doubt, smelling substances which rapidly pass into and give a peculiar taste and flavour to the milk, and when these peculiar flavouring substances are largely infused they affect the milk. Thus we know that the turnip flavour, for example, is readily imparted to the milk. Milk appears white on account of the suspended milk globules. In the measure in which those globules separate in the shape of cream, and milk becomes clearer, and acquires a peculiar blueish tint, which is a very good indication of the character of the milk. The less transparent it is the better; the more opaque it is the more butter it contains. And allow me here to notice that the quality of the milk is much more regulated by the amount of butter than of cheesy matter. An extensive series of analyses which I have made of milk have brought out this fact, that whilst the proportion of *caseine* varies but in a trifling degree, the amount of butter or fatty matter in milk is subject to very great varieties indeed. If you throw a glance at the tables on the wall, you can form an idea for yourselves of the great variations that exist in the amount of butter which a given quantity of milk is capable of yielding. Thus, in the first sample of milk you have no less than  $7\frac{1}{2}$  per cent of butter, in the second 5 per cent, in the third  $3\frac{1}{2}$  per cent., and in the fourth only 2 per cent. I have separated these analyses from a number which I made some time ago, and I have further increased them by analysing, from month to month, during the past season, the morning and evening

milk of our dairy cows, and greater variations than those given here I have not found. These four examples, therefore, may be safely taken as indicating the wide range of the variations which exist between the different constituents of milk; the specimen of milk which is exceedingly rich in butter is derived from a sample from the dairy of Mr. Harrison, at Foster Court. The second sample indicates a richer butter than usual. The third fairly represents the composition of milk of average good quality. And the fourth that of milk of a poor quality. But they are all four genuine milks. They are not in any way reduced abnormally; and I ascribe the great richness of the first sample to the extreme good pasture upon which the cows had been fed, at a season of the year when generally, milk becomes richer in quality, but less in quantity. In the months of September and October, and up to November, the quality of the milk very greatly improves, but the quantity recedes and becomes smaller. Whilst, however, this is true generally, it is not so always; for if the animals are stinted in food, they yield not only little milk, but also a poorer milk, and that at a period of the year when they should, and generally do, produce a richer milk. Speaking generally, milk is richer in the fall, and poorer in the spring of the year. But other circumstances may influence the character of the milk so as to produce different results. I shall have to speak presently more in detail of the various circumstances by which the quality of the milk is modified; but before doing so, I will point out the great difference in the composition of the milk of different animals.

#### COMPOSITION OF MILK OF DIFFERENT ANIMALS.

And first let me direct your attention to the composition of the milk of herbivorous animals—the cow, the ass, the goat, the ewe; and then the milk of carnivorous animals—the canine race, taken as an example of the suspension of milk. You will notice that the milk of carnivorous animals is very much richer in all its various constituents, more especially in *caseine*, or curd, and also in butter. It is an extremely rich milk and we have no food to compare with it. Solid butcher's meat contains less real food and more water than this description of milk. This will explain at once the extreme difficulty we experience in bringing up a puppy dog by hand. The fact is, that you have no food rich enough for that purpose. Perhaps the only food available, if you had to rear a valuable puppy by hand, would be a highly concentrated beef tea; that is an infusion of beef highly concentrated. No solid food or pure flesh is sufficiently concentrated to provide for the nourishment of a young dog. It is not only the amount of curd, but also the amount of butter, which is extremely rich. There is another peculiarity also. It is this: that the milk of carnivorous animals contains no milk-sugar at all. Milk-sugar, however, is very abundant in the milk of other than carniv

vorous animals; and curiously enough, it makes its appearance in the milk even of carnivorous animals when, by domestication, they are gradually accustomed to a bread diet. If you feed a dog with bread, the milk increases, and will contain some milk-sugar, and that quantity increases with the amount of bread and the starchy food with which you supply the dog. This shows the intimate connection which subsists between the character of the food and the composition of the milk of animals. Contrasted with the milk of carnivorous animals, the milk of the ass appears most inferior, and an extremely poor milk. But whilst it contains, as indicated in the analysis, 91½ per cent. of water, little *caseine*, scarcely any butter, and a very small quantity of ash, it is comparatively speaking rich in milk-sugar. Now, milk-sugar is a very digestible material. It is easily digested. Indeed, on the continent it is used as medicine in cases of indigestion. It is a household medicine for children. Children suffering from indigestion have administered to them a teaspoonful or two of this milk-sugar or *lactine*, as it is also called; and as an aperient medicine, I do not know another so wholesome. For invalids, therefore, ass's milk is, no doubt used in this respect—that it is an easily digested food. Persons suffering from indigestion are frequently unable to well assimilate the butter which is contained in good rich milk, and ass's milk, for this reason, is peculiarly well adapted to them. I question much, however, whether the composition of the milk of all donkeys is so poor as this. I ought to mention that my analysis is made of the milk of a German donkey, which, like Irish donkeys, is fed on the road side, not upon the richest of food. In short, it eats what it can pick up; but I believe that a well-fed donkey would furnish a much richer milk. I am led to this belief from having seen, by investigations, which I hope to publish in future number of the Royal Agricultural Society's Journal, on the variations in the composition of milk, what an important influence the amount and quality of food have upon the composition of milk. For a moment or two, allow me now to point out a few particulars with respect to the milk of ewes. I have here the composition of two samples of ewe's milk. Both were analysed by myself recently; one a fortnight ago, and the other was completed only the day before yesterday. The first sample of ewe's milk I had the pleasure of analysing for his Grace the Duke of Richmond, who had experienced a great many losses in his flock of sheep. Many lambs had died, and his grace thought it probable that the milk of the ewes was of a poor character, or contained something that was injurious. I put it under the microscope, and subjected it to a careful examination; but I found it perfectly normal. No pus, or other matter, which occasionally occurs in diseased milk, was present; and on comparing the analysis with the published analyses of ewe's

milk, I found it agreeing as nearly as you could expect in two samples of milk. The published analyses of ewe's milk made it closely resemble goat's milk, for this reason; but on analysing the milk from our own ewe pen I was struck with the very great difference in the quality. You will observe that in the first sample of milk, which is from the ewe pen of the College Farm, we have no less than 30 per cent., in round numbers, of solid matter; whereas, in the second sample we have only 16 per cent. There is thus, in the one sample of milk, nearly double the quantity of solid food that is in the other. I have not learned what time had elapsed from the ewes having lambed; but the milk analysed by me from our own ewe pen is derived from ewes that had lambed only three days previously. Now, the time at which the lambs had dropped has unquestionably great influence upon the quality of the milk. We know that the very first milk which is yielded by the ewe after the lamb is dropped is more like cream than butter. The sample I have before me is not the very first milk: it is milk that was secreted two or three days after. I gathered it from a number of ewes, and all had lambed within that period; but I was not prepared to find so great a variation. It is an important subject to ascertain what are the variations in the milk of the ewe at different times. But we have no data for making that comparison; and although I have made a report to his Grace the Duke of Richmond, that the milk of the ewes was of good quality when compared with other samples of ewe's milk—analyses, however, which were not made in England, but on the Continent—it is very possible that a poorer milk is produced, and after all that this milk was of an inferior character and of poorer condition. At any rate it is interesting to notice the high state of concentration of the milk that is yielded by ewes in the first week, or even three days after lambing. It is an extremely difficult thing to bring up a lamb when its mother dies within the first three or four days. There is a peculiarity in the condition of ewe's milk which throws some light upon the subject, and it shows the reason why such difficulties are experienced. I propose now to reserve a couple of ewes, and analyse their milk from time to time, in order to see if the milk gradually becomes poorer, or remains stationary, and also with a view of ascertaining what the average composition of ewe's milk is.

#### CIRCUMSTANCES AFFECTING THE QUALITY OF MILK.

Passing on, I would notice some of the circumstances by which the quality of milk is affected. The distance from the time of calving I have already referred to; I may, therefore, pass it over here, and refer briefly to the age of the animal. It is well known that an old cow does not yield such good milk, nor so much milk. I have lately seen an analysis of milk which gave



quite as poor a result as the one I have mentioned; it is that of milk analysed in Holland by Dr. Baumhauer. He states that it is the milk of a cow that had had ten calves, and nothing appears to be so unprofitable as to keep cows for so long a period. Generally speaking, as is well known to practical men, the milk becomes richer after the third or fourth calf has been dropped. The climate and the season of the year affect the quality of milk in a remarkable degree. In the moist and temperate climates we obtain a larger quantity, though usually a poorer description of milk, than in dry and warm countries. The quality of the milk is thus affected by the temperature of the air, and by the amount of moisture in the atmosphere. It may perhaps, be also due to the amount of moisture which in wet seasons is present in the produce; and that the general state of health and the condition of the animals have a marked influence upon the quality of the milk, need hardly be mentioned. It is so well-known, indeed, that no remark is necessary upon the subject. The time at which the milk is taken, however, has an effect upon the quality of the milk. In most agricultural treatises you will find it stated that the morning milk is generally richer than the evening milk; but my results do not favour this notion. I find the following to be the case;—Out of 32 samples of milk which I analysed, taking the morning and evening milk, I found that of 16 different cases, in 8 the morning milk was poorer than the evening milk, in 4 the morning milk was richer than the evening milk; and in the remaining 4 there was no perceptible difference between the quality of the morning and of the evening milk. I mention this particularly, in order to show how careful one should be not to generalise, to come to a conclusion hastily. At first I took it for granted that the morning milk was richer; and, indeed, the first three analyses I made confirmed that general impression. I need not go over the results at present. I merely mention the general effect. The first three mornings' milk which I analysed were, indeed, richer in milk; but on extending the series of analyses, I found afterwards a larger number of instances in which the evening milk was richer than the morning; and at various times I found that both were perfectly alike. What then, is the general conclusion we should draw from such facts? I believe that the time of the day had not so much to do with it as the quantity and quality of the food which is given some three or four hours before milking. I have traced this most distinctly. At one time I found the milk of our dairy stock was poor in the evening. The cows were then out on grass. They received in the evening, therefore, oil-cake and rape-cake, and then in the morning they produced a richer milk; which shows plainly the effects of the food on the morning milk. And at another time—in the winter—I found that when the

cows were fed in the morning, and again in the middle of the day, with barley-meal and rape cake, they produced a richer evening milk. I believe, then that the quality of the milk is affected by the food, and the time at which the food is given to the cows, and that we certainly cannot say that, in a general way, the morning milk is richer than the evening milk, or that it is poorer. It may be one or the other. It may be perfectly alike, or poorer or richer, as the case may be. The race, breed, and size, of the animal have also an important influence on the quality of the milk; and that Alderneys, Chateaux, and others are noted for the rich quality of their milk is too well known to the practical men to need any comment from me.

Lord Feversham—Have you ascertained what is the difference in the *quantity* as well as quality of the morning and evening milk?

D. Voelcker—The yield was not much greater in the morning than the evening; but I was about to make an observation on that very subject. It is generally believed that the thoroughbred cows do not produce so much or so rich a quality of milk, and that the common dairy stock or cross-breeds produce more or a better description of milk; but some experiments which I have made on the subject have given me a rather undecided result—a result from which I cannot draw any satisfactory inferences. In the month of September, 1860, I selected three cows from the common dairy stock, and three pedigree short-horns. They were kept in the neighbourhood of Bristol, on the present Mr. Stratton's farm, then in the occupation of Mr. Procter. They were on good pasture land, and I carefully ascertained the quantity of milk, and also the quality of the milk. After I had kept them some time on pasture, the milk was collected. I then gave to each set of cows 1 lb. of excellent linseed cake, and in one week's time increased the quantity to 2 lb. I then carefully analysed the milk of the common and of the pedigree cows; but upon looking over the results I could find no perceptible difference between the quality of the milk of the common stock and that of the thoroughbred short-horns. Thus, the common cows yield a milk which returned nearly 4 per cent. of butter, and the thoroughbred short-horns gave within two-tenths per cent. of the same quantity. The total amount of solid matter in each case was just alike. When 1 lb. of linseed cake was given them the quality of the milk was not materially improved. In both cases milk of about the same quality was produced; and the same general remark may be made with respect to the 2 lb. of linseed cake which were given to the cows. In all these cases the quality of the milk was not improved, neither of the common cows nor of the pedigree cows. The quantity of milk produced by the three pedigree cows, kept on

grass alone, amounted to 28 pints in the morning, and 21 pints in the evening, making together 49 pints. The common dairy stock produced rather more, being 31 pints of morning milk, and 21 pints of evening milk, in the whole 52 pints. When they received 1 lb. of cake the three pedigree cows gave in the morning  $26\frac{1}{2}$  pints, and in the evening 22 pints, together 48 $\frac{1}{2}$  pints: very nearly the same quantity as before, (A member—do you mean the three?) Yes; and the three common dairy cows produced 28 $\frac{1}{2}$  pints in the morning, and 18 pints in the evening, making 46 $\frac{1}{2}$  together. When 2 lb. of cake were given to them, the three pedigree cows yielded 26 $\frac{1}{2}$  pints in the morning, and 21 in the evening, together 47 $\frac{1}{2}$  pints; whilst the three common dairy cows produced 30 pints in the morning, and 19 in the evening, to ether 49 pints. It follows from this that, whilst the quality of the milk was not materially bettered, the quantity became slightly less in the case of the three ordinary cows; because we had from the three pedigree cows 49 pints of milk when kept on grass, 48 $\frac{1}{2}$  pints when they got 1 lb. of cake, and the quantity was further reduced to 47 $\frac{1}{2}$  pints with 2lbs. of cake; and from the three common dairy cows, when fed on grass alone, we got 52 pints, with 1 lb. of cake 46 $\frac{1}{2}$  pints, and with 2 lb. of cake 49 pints. It would appear from these facts, then, that the additional food had a tendency to go to meat, or to produce fat. This would show that we cannot increase *ad infinitum* either the quantity or the quality of the milk. Cows that have a tendency to fatten, when supplied with additional food rich in oil and in flesh forming matters like linseed cake, have the power of converting that food into fat. They do not produce a smaller quantity. It is this, then, which renders all investigations respecting the influence of food on the quantity and quality of milk so extremely difficult. Accordingly to theory, it would appear that food rich in oily or fatty matter would be extremely useful for producing a rich milk; but in practice we do not always find this to be so. Indeed we often find that very rich food has just the other effect. It produces by no means a better milk, but a smaller quantity, and fat and flesh instead of milk. Well, I repeat, these things render all investigations on the influence of food extremely perplexing. There are so many circumstances which have altogether a disturbing influence on the food in its passage through the animal system that it is difficult to trace its course, and still more difficult to predict beforehand what will come of it.

#### INFLUENCE OF FOOD ON MILK.

These remarks lead me naturally to speak a little more in detail of the influence of food on the quality of the milk. I just now noticed that the quality of the food, the composition of

the food, does not always indicate its adaptation or fitness for producing a good and an abundant quantity of milk. For, besides the tendency which cows that are good fatteners have to convert peculiarly rich food into fat, there are some purely practical considerations to be taken into account before we can decide upon the quality of the food which ought to be given to milking cows. It is well known that oily matters pass rapidly into the milk. Cows that are supplied too abundantly with linseed cake produce milk that does not make butter. A very curious instance was brought under my notice some time ago, by Mr. Barthropp, of Crettingham, in East Suffolk, of milk furnishing cream that could not be made into butter. When put into the churn it beat up into froth, and could not be converted into butter; the *caseine* would not separate, and I have been informed by Mr. Barthropp that he had given his cows linseed-cake in considerable quantities. This excess of linseed-cake, and, perhaps, the want of good dry hay, have evidently the effect of producing too much liquid fat; and in trying to separate as well as I could the solid or crystallised fat from the liquid fat I obtained this proportion: one-third of solid fat, in round numbers, and 23 parts of liquid fat. In churning the whole of it was made up into a sort of froth; in fact, it could not be churned. The butter remained a liquid, even at the cold period of the year when the milk was analysed—namely, last January. I have never become acquainted with so striking a case, as showing the influence of a great excess of oily food on the quality of the cream and butter. In speaking of the quality of cream, more especially the fatty portion of it, the butter, I would likewise take this opportunity of observing that bad oil-cake, and especially bad linseed cake, does a great deal more harm than is generally supposed by the dairymen. The inferior taste of the milk of stall-fed cows is well known; but I believe it is not so well known that the wholesomeness of milk is affected by the abominable matters which are occasionally put into linseed cakes. At the present time, oil-cake crushers seem to enjoy the privilege of incorporating any kind of oil refuse, no matter what it is, with linseed cake; and since this has been so, we hear more frequently of diseased milk, and of milk which has a disagreeable flavour. When the necessity arises for feeding cows with additional food, and linseed cake is found by practical men to be preferable to other kinds of food, I would suggest that it is money well laid out to buy the very best and finest cake, and not, for the sake of the lower figure, get it of an inferior quality. The use of water-food, distillery wash, the acid waters of starch makers, and similar refuse, make the milk, as is well known, watery, and dispense with the necessity of mixing water with the milk afterwards. By far the most commonly adulterated material



is watery food. Water is not so much added to the milk, after it is drawn off from the animal, as it is incorporated with the milk in the system before. It is well known that food which contains lactic acid has a tendency to produce an abundance of milk; and when animals are fed with concentrated food, such as bean-meal or cake, it may perhaps be advisable, in the absence of brewer's grains or distillery refuse—two materials which contain lactic acid—to generate some lactic acid by keeping barley meal for some time in contact with water, and letting it slightly ferment, perhaps with some vegetable refuse matter, which has a tendency to hasten the formation of lactic acid from barley meal. By doing this, I am inclined to think that concentrated food, like cotton cake, bean-meal, or rape-cake, would be rendered more digestible, and more readily made available for the production of milk of a good character. Time does not permit me to speak in detail of the influence of the various kinds of food upon the quality of the milk; and I purposely cut it short, in order that, if some spare time is left, those who are practically better acquainted with the subject than I am may have an opportunity of throwing out some hints, and perhaps of opening up a little discussion respecting it. What time I have at my disposal I hope to fill up usefully by directing your attention to the mode of testing the quality of milk.

*(To be concluded in our next)*

### On Steam Cultivation—its rise and Progress.

A very interesting paper on this subject was read at a recent meeting of the London Farmers' Club, in England, by Mr. James Howard, the celebrated Implement Maker, of Bedford. The following paragraphs give the substance of the communication, which will not be devoid of interest to our readers generally.—Eds.

*Influence of Steam Power.*—It may appear startling, but 'tis no less true, that to the discovery of the steam engine, more than to any other cause, this country owes its great wealth, its manufacturing greatness, and the means of supporting its abundant population.

"Until the discovery of this mighty agent, the population and the wealth of England were almost at a stand still. So lately as 1780 we only numbered 8 millions; and 200 years before the population was 6½ millions. No sooner however, was the steam engine fairly brought into use than that wonderful expansion of our commerce commenced, which brought with it a corresponding increase in population, and which has made England the great mart of the world. The quick processes, and rapid results of the fac-

tory have of late years been imported into the thrashing of our crops; no wonder, then, that the farmer has begun to regard the ploughing of his land by-horse-power as a slow and tedious operation, and has become desirous of introducing into his fields the same despatch and the same powerful agency he has found of so much advantage in the preparation of his grain for market."

*History*—Although, until a recent period, public attention had hardly been turned to the question, steam ploughing is by no means a new subject.

"(1) As long ago as 1618, one David Ramsey and a Thomas Wildgoose obtained a patent for 'Newe, apte, or compendious formes or kinds of engines or instruments, and other p'fitable invencons, wayes, and meanes, for the good of our Commonwealth, as well as to ploughe grounde without horses or oxen, and to enrich and make better and more fertile, as well barren peate, salte, and sea sande, as inland and uplande grounde, within our Kingdomes of England and Ireland, and our Domynyon of Wales; as alsoe \* \* \* to make boates for the carriage of burthens and passengers runn vpon the water as swifte in calmes, and more seff in storms, then boates full sayled in great wynds

"(2) In the same year that Ramsey took out his last patent, a William Parham and others had a patent granted for a 'certain newe and readie waye for the good of our Commonwealth, for the earinge and plowing of lands of what kind soever, without the vse or helpe of horses or oxen, by meanees of an engine, by them newly invented and framed.'

"(3) About 40 years after Ramsey and Wildgoose, another genius arose, named Francis Moore, who took out no less than three patents, having for their object 'the dispensing with animal power in tillage, navigation, &c., &c. Mr. Moore states, 'his machiue to go without horses.' 'Tis recorded in a periodical of the day that Mr. Moore had such faith in his inventions that he not only sold his own horses, but by his advice many of his friends imitated his example, fearing their value would be affected by the general introduction of his machine.

"(4) About the same time, 1770, another inventor appeared, a Mr. Richard L. Edgeworth, who patented an engine with an 'endless railway,' almost identical with that patented by the late lamented Mr. Boydell.

"(5) In 1810, in which year a Major Pratt obtained letters patent for a steam ploughing apparatus. One of his schemes was to place the engine and anchor on opposite headlands, or in boats, as Mac Rae's. The implement described by Major Pratt may be regarded as the first 'balance plough,' the ploughs being placed back to back, or heel to heel, and working on a fulcrum in the frame, one set being thereby raised out of work while the other set was lowered into work.

"(6) Between 1810 and 1832, numerous schemes were propounded and patents taken out for ploughing, digging, or trenching the land, by eegines working in various ways, but I find nothing of real value until the latter year, when the celebrated John Heathcote, M. P., a lace manufacturer of Tiverton, obtained a patent for certain new and improved methods of draining and cultivating land, and new or improved machinery and apparatus applicable thereto."

"His engine travelled along the headlands, and when ploughing bogs was constructed with an endless web, forming an endless roadway. His anchor, called by him an 'auxiliary carriage,' also moved along the headland as the work proceeded. Mr. Heathcote described in his specification a means of making his anchor self-propelling. The engine he proposed to fit with two winding barrels, one on each side, so as to work either one or two sets of implements at a time."

In connection with Mr. Heathcote's scheme, I may mention one fact highly honourable to the foresight and public spirit of the Highland and Agricultural Society of Scotland.

"As long ago as 1837, this society offered a premium of £500 for the first successful application of steam power to the cultivation of the soil. Mr. Hall Maxwell, the zealous and indefatigable secretary writes me :— 'At the society's show held at Dumfries the same year, £100 in addition was subscribed to pay the expenses of exhibiting and working what was called 'Heathcoats' Plough.' 'The trial of this plough was to some extent satisfactory : but the judges did not consider the implement sufficiently perfect to entitle it to the premium. The society, however, continued to offer the prize until the year 1843."

"Some 20 years afterwards, the Royal Agricultural Society of England followed the example of the Highland Society, by offering a prize of a similar amount, and it would have done well and saved a great deal of 'heart-burning' if it had also followed the Highland Society in the simple wording of the offer, viz., 'the first successful application of steam power to the cultivation of the soil.'"

"(7) Mr. Heathcoat was followed by Alexander Mac Rea, who in 1839 obtained a patent for 'machinery for cultivating land by steam power.' The primary object it would appear, was to adapt his apparatus for use in British Guiana, where the fields are intersected by wide ditches and canals.

"Mac Rea, although his engine and anchor are shown working in boats, described his apparatus as applicable to the unlevel lands by working the engine and anchor along the headlands.

"The implement of this inventor is worthy of notice, for, as the drawings show, it is arranged with the ploughs point to point, as Messrs. Fiskins and Mr. Fowler's, to which it bears a strong resemblance ; Mac Rae also anticipated

our friend Mr. Williams, of Baydon, by having each plough independent of the other, like the coulter of a drill.

"(8) In 1849 Mr. H. Hannam, of Burcote, near Abingdon, a well-known agriculturist, in connection with Messrs. Barrett and Exall, constructed an apparatus for steam ploughing which may be regarded as the first attempt to work ploughs or cultivators by the ordinary portable engine, and also to be the first attempt to plough the land by an engine stationed at one corner or outside the field. We have no evidence that wire ropes were ever employed for steam ploughing until those supplied to Mr. Hannam by Messrs. Barratt and Exall. From Mr. Exall I learn that the ropes were 1600 yards in length, and from the drawings exhibited it will be seen that they were coiled and uncoiled by a stationary windlass, having two winding barrels, in the same manner as those now in use. The ropes were also passed round pulleys at the corners of the fields and now so well known.

"About 60 acres were ploughed or cultivated by this apparatus at the rate of about 5 acres per day, when it appears the rope, from deficient strength, or probably from bad handling, gave way. Doubtless, had more perseverance been shown, the parties would have been rewarded with greater success ; but I very much question whether any system of rope traction would have become a permanent success but for the introduction of ropes made of steel wire, which has contributed very greatly to their durability.

"(9) In 1851, at the great exhibition, Lord Willoughby D'Eresby showed a complete steam ploughing apparatus, consisting of two engines, with a winding barrel on each—i. e., an engine for each headland. These advanced as the work proceeded. A number of ploughs on Lowcock's turnwrest principle were placed in a frame and wound or drawn from engine to engine by a chain. I believe if a wire rope instead of a chain had been employed his lordship would have succeeded.

"(10) Following up the course of invention, we next come to the scheme of Messrs. Fiskin, of Stockton-on-Tees. A stationary engine was employed, a main object of Mr. Fiskin being to dispense with wire ropes, and give off the power of the engine by means of a light, endless, hempen cord, worked at a high velocity, which passed round pulleys on a self-moving anchor, and thence to winding-drums placed upon the implement, the revolution of which imparted motion to the ploughs. The anchors were self-propelling, their onward motion being effected by the revolution of the pulley placed on the anchor and round which the rope was passed ; second, the plough was on the balance principle, and was steered in either direction by means of locking the wheels. This apparatus was exhibited at the Royal Agricultural meeting in 1855, and created quite a sensation ; as well as making a very favourable impression."



(11) In 1854 Mr. Fowler exhibited at the Royal Society's meeting held at Lincoln his steam draining plough and apparatus.

"In the report of this meeting, published in the *Journal*, a diagram is given of this machine. The judges, in speaking of its wonderful performances, wind up with these remarks:— 'Surely this power can be applied to more general purposes; we earnestly commend the idea to our engineers and mechanists.' "

(12) Whether those to whom the idea was commended took much notice of it or not we do not know, but we do know that the idea commended itself to a farmer, in the person of Mr. Smith, of Woolston, who in a published letter informed the public that he commenced his experiments after reading this report.

"Mr. Smith subsequently ordered an apparatus of Mr. Fowler, with which he proposed to work, and subsequently did work his cultivator. An opinion has been prevalent that Mr. Smith has a claim to the invention of the whole apparatus; but in 1856, at a meeting of the Society of Arts, Mr. Smith admitted 'that his first windlass was constructed by Messrs. Ransomes, under the direction of Mr. Fowler.' I do not mention this to detract from the great merit due to Mr. Smith as a pioneer in steam cultivation, but simply that the merit should be properly divided or given to the right party; and I will remark, in passing, that I believe Mr. Smith has done as much or more than any other man in arousing the country to the importance of steam culture, and to the fact that land can be economically worked by steam power; he has also proved that land can be successfully and continuously farmed by simply 'smashing' or stirring, and that inversion of the soil is not so absolutely necessary to successful cultivation as it was generally believed to be."

*Causes of delayed Success.*—Political economists tell us that the "machinery of a country will naturally correspond with its wants, and with the history and state of its people." This is undoubtedly true; the schemes we have described having been invented before they were really wanted or before their need was felt.

"There can be no doubt that a redundant population and the paralysing effect of the old poor law had considerable influence in retarding the use of machinery in farming; also the wide spread and deeply seated conviction that the employment of mechanical power diminished the demand for hand labour; and this conviction, which was shared by all classes, led people to take very little interest in labour-saving inventions.

"Again for want of railways, coal was at such a price, and so distant from the farm, that in most districts half the horse power that would have been saved by the introduction of steam power would have been employed in hauling coal for the use of the engine.

"The revolution which has taken place in

farm practice by the substitution of the steam thrashing machine for the flail and the horse gear has, doubtless, been brought about very much through the intersection of the country by railways.

"This again has led the farmer to appreciate the value of and imbibe a taste for steam-driven machinery; it has, moreover, accustomed him to expend comparatively large sums of money in the purchase of machinery. We are creatures of habit, and 'tis astonishing, when we begin to spend money on machinery or anything else, how easy it is to jump from £300 to £500, and from £500 to £800.

*Classification of Inventions.*—I divide the inventions, which since 1855 have been brought before the public, into the following classes:— 1. Engines to travel over the surface, drawing their implements with them. 2. Locomotive engines working on railways and drawing implements after them. 3. Engines moving along the headlands and working implements by means of wire ropes. 4. Engines stationary whilst at work, and working implements by means of wire ropes. A number of schemes under each head have been either brought before the public or patented; and without using names more than absolutely necessary, I will simply allude to the alleged advantages and disadvantages of each system.

"I would here take the opportunity of stating that in endeavouring to bring steam cultivation into practice, I believe no one has worked harder or spent his money more freely than Mr. John Fowler, and so far as I am concerned I hope he may be amply repaid for his great efforts.

"(1) Engines which move over the land. Under these disadvantages, their weight is immense, and they have to propel themselves over surfaces more or less uneven or more or less yielding; the consumption of fuel and water is at least fourfold that of a stationary engine, and the repairs, owing to the irregularities of the surface of the land and greater friction, would probably be tenfold. The weight of such a machine, passing over the land, is also most objectionable. Mr. Romaine, to whom much praise is due, has worked hard to carry out the principle of a rotary cultivator moving over the surface—a scheme so ably advocated by Mr. Wren Hoskyns. I believe, however, Mr. Romaine has abandoned the plan in favour of rope traction, for which he has obtained one or two patents.

"(2) As to the scheme of laying down rails all over a farm and working locomotive engines upon them, whatever may be the economy and despatch of such a system when once carried out, I think it highly improbable, considering the outlay to be £20 to £30 per acre, that it will ever come into use in this country; at all events, not until landlords generally are much richer, and until a disposition to spend their

money in the improvement of their estates has obtained more hold throughout the country.

"(3) Next in order are the engines which travel along the headlands as the work proceeds. These doubtless employ their power more direct, and with a smaller quantity of rope than engines stationary at one point, but they have these drawbacks: when the soil is at all wet the passing of a heavy engine along the headlands, and the necessary coal and water haulage after it, destroy in great measure the fertility of the headland, as well as leaving a good deal of hard work subsequently to be done by horse power in bringing the land to a tilth.

"Again, in hilly countries the engine is at work sometimes on a steep ascent and sometimes on as steep a descent, at times inclining to the right, and at others to the left; this will doubtless render the cost of keeping the engine in repair much greater than one that is stationary and always working upon the level. Another disadvantageous feature is that a headland all round must be left unbroken if the field has to be worked a second time by steam.

"(4) Lastly, we will take the engines stationary while at work. The main objections urged against these schemes are, the extra length of rope required, and the loss of power by the employment of pulleys round which the ropes are passed; the advantages claimed are, they are less costly to purchase and to keep in repair, more simple of construction, consequently better adapted for ordinary farm labourers, and irregular shaped fields can be ploughed as well and almost as quickly as square ones. By stationing an engine at one point, fields of 30 or even 50 acres each can be cultivated without any remove of engine or apparatus, and if the farm be well laid out, twice this quantity can be done from one point. A pond or a well sunk at convenient spots saves all water carting, and the coal is all brought to one point instead of having to be carted after the engine.

"Some parties have greatly exaggerated the loss of power entailed by the passing of ropes round pulleys. I have heard it stated in this room that for every pulley used a horse power is sacrificed. Now, so far from this being the case, I find by most careful experiments that when working a cultivator drawing 15 cwt., and the ropes arranged in a square, the loss of power from friction is 25 lbs. per pulley, just one-sixth of a horse-power. Even this is not so great a disadvantage as at first sight would appear, for if the pulleys were reduced to two and the same strain put upon them, the friction would be increased one-third; this arises from the fact that the ropes would then have to pass half round the pulley instead of one-fourth only. The experiments at the Leeds meeting proved most conclusively that very little power was lost in the friction of the wire ropes, when properly supported upon pulleys.

"Mr. Pike, in my neighborhood, has a field of 50 acres, in which he stations an 8-horse engine, at the extreme corner, where he has dug a pond. This 8-horse engine, without ever moving, breaks up this field of heavy tenacious soil to a depth of 7 or 8 inches, at the rate of 7 or 8 acres per day: so much for loss of power from pulleys and extra length of ropes."

*Achievements.*—Having now very imperfectly sketched the rise and progress of steam cultivation, I will, in a few words, sum up what I consider what has already been achieved.

"Some 400 or 500 farmers have purchased steam cultivating apparatus, of one kind or other. From the Britannia Iron Works, Bedford, alone, about 200 steam cultivators have been sent out.

"The experience and the opinions of a large majority of the purchasers have been published, and all, or nearly all, have testified to their approval and appreciation of steam cultivation."

*As to the future of steam tillage* I shall say but little. What effect the general adoption of steam power on our farms will have upon the country no one can foresee. To expect that steam will do as much for agriculture as it has done for manufactures and commerce would be idle; but that it will enormously increase the productiveness of the country no one who has paid the least attention to the subject can for a moment doubt. Whether it will increase correspondingly the profits of the farmer we must wait to see; but it is worthy of remark that the most highly remunerative amongst the manufacturing trades of this country have been those which require a large plant in the shape of steam-driven machinery. To the landlords of the country the question of steam ploughing is of the greatest importance, and a few noblemen and landed proprietors have come forward and introduced steam cultivators on their estates; but it is mainly to the enterprise of the tenant farmers that the system has made so much way in the country. Landlords will consult their own interests as well as that of their tenants by removing all hindrances to the adoption of steam power. All unnecessary fences, to say nothing of trees in ploughed fields, must be got rid of; the farms must be properly laid out; and, above all, greater liberty of action must be given to the tenant in the course of cropping and other matters, before the resources of our farms will be fully developed. That the new order of things will have a considerable influence on the labourer I have no doubt. The great advances which have been made of late in agriculture, and the changes which are taking place, force on our notice the fact that a more intelligent and a more careful class of labourers are becoming indispensable to the farmer; and by employing these in the use of a higher order of machinery they will be a field for the more intelligent and useful farm servant. Under the old order of things—however willing to encour-



age the skilful the farmer might be—this was difficult to be found. In conclusion, nothing indicates more clearly the great advance which is being made in the agriculture of this country than the introduction and spread of a better class of farm machinery. The machinery of a country has ever been a gauge of the intelligence of its inhabitants; iron clad ships and rifled guns are not the implements of warfare of barbarous or semi-barbarous nations; nor are steam-driven thrashing machines and steam ploughs the implement of a backward and bigoted agriculture.

### Rot in Sheep.

"Plenty of skins, but we are saying as little as possible about it," was the report recently given us by a friend who lives in a certain sheep-rearing district, which shall be nameless, and of whom we had inquired how matters were progressing with respect to what some call "the woolly people."

"Plenty of skins," is a very significant expression, telling not only of actual losses, but of other points to which we may allude before closing these remarks. And when we see the bleached-like pastures, saturated with water, and the equally bleached-like sheep, with their wool apparently stuck close down upon their skins, but ready to peel off at the slightest touch; when we notice the yellow tinge which pervades the eyes, &c.; the general absence of that sprightliness which characterizes sheep in high health; and when these and other well-known symptoms are furthermore accompanied by the tell-tale "*poke*" then we feel assured that if there is not already, there soon will be "plenty of skins," although the abundant supply of that article is not accompanied, in that case, with either profit or satisfaction to the stockmaster.

But is justly dreaded by the sheep-owner as the most direful calamity which can befall his flock. It sweeps off the animals like a pestilence, and if it is known to exist or occur in a flock, a grave suspicion arises as to the general health of that flock—such a suspicion, moreover, becoming, when made public, a very serious matter; for all who are aware of the stigma will avoid the risk of purchasing when the seeds of a fatal disease may be lurking in the constitution of the animals. For these reasons it is of the utmost consequence to the sheep-owner that every practicable means shall be resorted to in order to *cure*, if possible, or, what is much better, to *prevent* the appearance of this disease, if such can be accomplished.

Now, we may at once say we have no faith in any so-called cures for rot, because by the time it begins to be so much developed as to attract attention the disease is beyond the power of medicine. We must endeavour to prevent the occurrence of the malady; we may delay its progress when sheep are even affected by it, but we

cannot actually cure it—we cannot eradicate it so as to restore the affected animals to a pristine state of health.

Excessive moisture stagnating in the soil is a predisposing cause of rot. We are not alluding at present to the scientific view of the question, embracing the history of those animalculæ which exist in the livers of rotten sheep: those who are desirous of following out this part of the subject will find it fully and ably discussed in Professor Simonds' admirable lecture, delivered at a weekly council meeting of the Royal Agricultural Society of England, and reported in Nos. 17 and 18 of our volume for 1861. We are considering the subject practically, and for that reason we refer in the first place to the effects produced by excessive moisture, particularly stagnant moisture in causing rot among sheep. The removal of this agent in the development of the disease is entirely within our reach. When we drain the land we lessen the probability, if we do not actually remove altogether the possibility, of rot making its appearance on such land. When we say this, we refer to sheep which are bred and kept on drained land. It is true, cases of rot may and do occur on pastures which are either artificially or naturally dry; but if so, we may be certain that the disease is confined to sheep which have been bought in, or brought from another place where draining has been neglected; unless, indeed, some rotting spot has been left unnoticed and undrained in the range of pasture. We know this from experience. We have bought sheep early in autumn—sheep which were apparently perfectly sound when purchased, yet, although put on sound pasture, those sheep have rotted and died to such an extent that very few remained alive out of the lot at shearing time. At the same time, sheep bred on the ground, and others brought from healthy localities, although grazing along with the diseased sheep, and treated in every respect in the same manner, remained perfectly sound. The seeds of the disease were laid in those sheep prior to their purchase, although the disease itself had not become sufficiently developed to attract attention.

Referring to the death of sheep from rot during the winter and spring months, Prof. Simonds remarks that the most dangerous period for sheep is about midsummer, particularly when there is much rain with the elevated temperature of that season. It is at that period the foundation is laid of the disease which terminates, some months after, in a change from a thriving to a wasting state of condition, in jaundice-like appearance of the skin, &c., in the accumulation of that particular swelling under the lower jaw which invariably accompanies this disease, and in all the other tokens of an unhealthy constitution ending in death. We feel convinced that Prof. Simonds' views are correct, and it shows the necessity of avoiding hasty conclusions when rot does make its presence apparent during the winter months.

But as draining has been proved to be effectual in preventing the disease—nay, more, in changing the character of the districts which at one period were notoriously unsound—it is evident that every flockmaster should strive to have his land drained, and thus permanently secure the health of his sheep. Through draining, as we usually understand the phrase—that is, drains 42 or 48 inches in depth, having conduits of pipes or broken stones for the passage of the water—is the system which must be adopted when the sheep pastures are combined with tillage operations; but when this is not the case, a more simple and more cheaply executed mode of draining will suffice to carry off excessive moisture and lessen or remove the danger from rot. Surface draining has proved of immense service in sheep-rearing districts, improving the climate, increasing to a great extent, the production of nutritious grasses, and not only lessening the annual mortality, but enabling the stock-masters to keep more sheep than they could do whilst the land remained in its natural condition.

These drains are from 16 to 18 inches in depth, 20 to 24 inches wide at the top, and 6 to 8 inches wide at the bottom. Double drains—that is, the drains made for the purpose of carrying off the accumulated water from drains of the foregoing dimensions to the nearest main drain or rivulet—are 30 inches wide at the top, 18 inches deep, and 12 inches wide at the bottom. The distance at which the drains are cut from each other depends on the nature of the land, and may vary from 6 yards to 60, according to circumstances. The cost of cutting surface drains of this kind ranges in Scotland, where the system is much practised, from 1d. to 2d. per seven yards, the double drains being just double the price of the minor drains, each seven yards of the double drain counting as fourteen yards of the other. The acreable cost, therefore, is comparatively trifling, amounting, at say 20 yards distance between the drains, to from 3s. to 6s. per statute acre. Mr. Cullen, of Corry, Co. Lincoln, finds “that open drains, 50 feet apart, may be formed 2 wide feet at top, 10 inches at bottom, and 15 inches deep, at a cost of “about 7s. 6d. per statute acre.”

Yet, trifling as the cost of such draining is, the benefits resulting from it are immense. Mr. Cullen's experience is “that land so drained (after two years) will be worth double, treble, or even fourfold more than when undrained;” and Mr. Latham, of Alberchald, Inverness-shire, in a prize report “On Draining Sheep Farms,” which appears in the recently issued part of the *Transactions of the Highland and Agricultural Society*, illustrates the advantages of surface draining, with reference to rot, in the following manner:—

“Striking instances of the cause and cure of this disease have come under my observation of late years. On an adjoining farm its ravages were very serious previous to the marshy ground being drained, but as soon as this was accom-

plished the rot gradually disappeared, and the sheep became, under careful management, a sound and superior stock. Now, however, after being open for thirteen or fourteen years, these drains, which were cut much too shallow at first, are gradually filling up, and the rot has returned.”

Open surface drains, we must observe, should be scoured out once in every three or four years, and if this is done the drains will be kept always in good working order, at a trifling expense.

If pastures which contain much stagnant moisture are of such a nature as to cause rot, it is certain there are some other points in management which tend to foster the development of the disease. Some of the most prominent may be summed up in one word—over-stocking—because this not only includes the want of a sufficient amount of nutritious food, but also the *fouling* of the pastures—a circumstance which is highly detrimental, whenever it occurs, to the health of sheep. To confine a lot of sheep on a limited piece of pasture for months, without changing them to another field where they can get a clean bite—that is, where they are entirely dependent on the pastures—is about the worst treatment sheep can receive. Yet we often find it practised—we find lambs, when weaned, put on a very indifferent piece of grass, kept there during the autumn and during the winter, without being shifted for a single day; and when such is the case, we never feel surprised to learn that there are “plenty of skins” lying about the owner's premises. Dirt and starvation are sure means of bringing on disease on the human subject, and dirt and starvation are just as certain to bring on disease and lead to death among sheep. We have heard of pasture lands which bore a sound character—where rot was, in fact, unknown—until the flocks were increased beyond the numbers which the land previously carried, and no sooner was this done than rot appeared, nor was the disease banished until the flocks were reduced to the former complement.

Professor Simonds shows that a generous diet will stay the progress of rot, if it will not actually prevent its appearance. Alluding to sheep in the earlier stages of the disease, he says:—

“If the simple plan of protection with nutritious food is persevered in for some time, you may often save your animals. I did that,” he further says, “many years ago, I purchased a number of rotten sheep: I gave them no physic of any kind, but merely kept them in sheds during the winter time, fed them with corn and cake, giving them the most generous diet I could; and I not only prevented the further progress of the disease in several of these cases, but I even made the animals accumulate flesh, and they went into market in the following spring, forming pretty fair meat for the people. This shows what can be done by generous diet and a protection of the animals.”



In the course of his remarks, Professor Simonds showed that he still followed the same practice when apprehensive of rot. Referring to 1860, he said:—

"Now, what have we had in the past season? We have had a very wet summer. I had a number of sheep, and foresaw what was coming. I said to some of my neighbours, 'We shall have a great deal of rot this year;' and I thought I would attempt, if I could, so far as my own sheep were concerned, to save them. What did I do? The sheep were on wet meadows, up to the fetlock joints, nearly every day, and nobody could avoid it. But at midsummer I began to feed the lambs and sheep with corn and nitrogenized food, giving them with every meal a small quantity of salt. I continued that plan during the autumn, and I have the satisfaction of saying that I do not believe at the present time [April 1861] I have one of those lambs affected by rot. I kept killing them week by week to watch their progress."

Before concluding his lecture, he again returned to the advantages derived from the use of nitrogenized food—that is, food which forms blood and flesh, not fat—and wound up his remarks in the following manner:—

"I again say, that if we commence at midsummer, and continue the treatment through the dangerous period of a wet season, we may do a great deal in the prevention of the disease. And I may go further, and say that even on farms where we have what are called rotten pastures, on which sheep are placed, they may be preserved to a very considerable extent, simply by giving nitrogenized food and salt, to destroy those creatures within the stomach, and to prevent their final change, alternating with the salt a tonic, invigorating agent, such as sulphate of iron. I do not depend on the salt alone—far from it; but it is a valuable agent, and its value depends more upon putting these things into salt water, as it were, in the stomach, than anything else. This is the course I recommend. You have to look to the condition of the liver in a wet season; you have to look to the necessity of laying the foundation for a good quality of blood, by giving these animals nitrogenized food, and throwing sulphate of iron into the organism. . . . This is the reason why sulphate of iron should be employed. It should be given in fine powder, and in doses of about half a drachm a day; not, however, that a larger quantity would be prejudicial. The sheep should be divided into small lots; and if you have about a score feeding in one trough, there should be ten drachms of sulphate of iron mixed with the food for the day: and then, if one should get a little more, and another not quite so much, it will be of very little importance."

The publication of Professor Simonds' lecture drew out a letter from "A Yorkshire clay-land farmer," which first appeared in the *Mark Lane Express*, and was transferred to our

columns in the 18th number of last year's volume—page 231. The writer of that letter had suffered for many years from rot, owing to the "marshy nature of the soil" of his farm "and poverty of the herbage."

Twelve years ago he had commenced giving his sheep "about one gill of fine old dry barley each during the autumn and early part of spring," and so satisfied was he with the results, that he persevered in the practice during all the twelve years, having kept his sheep in perfect health by means of this more nutritious diet than the "poverty of the herbage" of his farm could have supplied them with. This is precisely the same principle as that upon which Professor Simonds acted, "for fine old dry barley" contains a considerable portion of nitrogenized matter.

If, therefore, we are desirous to ward off that fatal disease which we have been discussing in these brief remarks, we must make up our minds to relieve the pastures from the superabundance of moisture with which they are saturated, and which, at present, remains stagnating in the soil; we must stock our pastures moderately; we must protect our flocks as much as possible from the inclemency of winter; we must feed them on generous diet, thus "laying the foundation for a good quality of blood;" and when we have fulfilled all these conditions, we may rest assured that if we have in future "pleaty of skins" these will be in their proper place—on the outside of good, healthy, living bodies.—*Irish Farmers' Gazette*.

## Agricultural Intelligence.

### Spring Shows.

We are informed of the following Shows to take place this Spring. We request secretaries of Agricultural Societies to inform us of the date of their exhibitions at as early a date as possible, so as to admit of publication in time to be of use to those interested:—

Fullanon, Logan, and Hibbert Agricultural Society, at Mitchell, April 2.

West Riding of York Agricultural Society, at Weston, April 23.

King Township Show and ploughing match; at Kettleby, April 22.

Reach and Scugog, at Epsom, April 29.

Pickering, at Duffin's Creek, April 30.

West Gwillimbury, at Bond Head, April 30.

Brant Township, County Bruce, at Walkerton, April 28.

County Peel, at Brampton, May 1.

North York, at Newmarket, April 30.

County Halton, at Milton, April 23.

Walpole, at Humstreet's Hotel, Stage Road, April 16.

- Rainham, at Rainham, April 18.  
 Western Branch, Haldimand, at York, April 23.  
 County Haldimand, at Cayuga, April 24.  
 County of Lincoln, at Grimsby, April 22.  
 Hamilton Horticultural Society, 1st Show, May 24.  
 East Middlesex, at London, April 29.  
 Lobo Township Society, at Mr. E. Cutler's, April 19.  
 County of Norfolk, at Simcoe, April 9.  
 West Middlesex, at Strathroy, April 24.

### Removal of Mr. W. H. Lock.

Our readers will regret to learn that Mr. W. H. Lock, of Yarmouth, Elgin, the well known agriculturist and breeder of Devon cattle, has left this Province, and has taken up his residence near Urbana, Champlain Co., Illinois. Mr. Lock has been the most successful breeder and exhibitor of cattle in the county, and has taken more prizes for his Devons than all the other breeders combined. Mr. L. imported the stock, six in number, fourteen years ago, and at this time the progeny are to be found scattered all over the Province. He has bought a farm of 1,300 acres of land, 800 acres of which are improved, 300 in grain, and 200 in wood. Besides this, he has rented 500 acres. He took with him seventy-eight head of his fine Devon stock; one hundred pure bred sheep; thirteen horses; six hogs of the finest quality, besides a large assortment of implements. His wife, three sons, and one daughter have gone with him. Upon enquiry as to the cause that induced Mr. Lock to leave we find, that he thought that by removal to the States he would be less heavily taxed than in Canada—a most erroneous idea, for in addition to the ordinary State taxes, at all times heavier than similar imposts in Canada, the cost of the war has yet to be paid, and the landed interest will naturally be the one on which the charge will principally fall. We are sorry to lose Mr. Lock, sorry that so much valuable stock has gone with him, and sorry that so far as taxation is concerned he will find that he has jumped out of the frying pan into the fire.—*London Free Press.*

### Horticultural.

#### Fruit Prospect in Niagara Township.

EDITOR AGRICULTURIST:—As the fruit crop forms an interesting topic for inquiry, your readers in Toronto, and the cities north of the lake, will be glad to learn, that up to this date, the prospect of peaches is all that we could desire. The fruit buds are uninjured by the frost of last winter, and the cold

weather of March, has retarded the swelling of them, and as there was no crop last year, the trees are in fine condition, to produce an abundant one this, if not injured by the late spring frosts. But as a general thing we do not apprehend much danger from this cause. The cold winds from the lake greatly retard the opening of the blossoms, and often prevent a frost near the lake shore, when a few miles back every thing is cut off. It is seldom that we lose our peaches by spring frost. The greater danger we are exposed to, is that of the buds not being sufficiently ripened in the fall, or by being pushed too forward by the late warm moist weather of autumn, as was the case last year. In such cases a few degrees below zero is sufficient to destroy them, while in a proper condition they will bear even twenty degrees below zero with impunity. I am glad to say that there are several large peach orchards in this vicinity that will be in good bearing order in one or two years more, that will afford you a supply, even if our friends across the river should be excluded by the repeal of the reciprocity treaty. In the last two or three years a great number of trees, principally apple, pear, and peach, have been planted in this township, more particularly that tract lying along the river and lake shore from Queenstown toward the city of Hamilton, which may be styled the fruit garden of Canada, *par excellence*. More especially so for the supply of the large cities along the lake and the river St. Lawrence, enjoying as it does an easy communication with them all; which is much more favorable as well as cheaper than railroad transportation.

As the season for planting orchards is near at hand, I would earnestly entreat those intending to put out trees to plant no more than they can well attend to. It is not necessary that land for orchards should be of the very richest description, nor yet is it necessary that the trees should be over fed by abundant applications of manure. Trees, like children, can be killed by kindness, but this is the exception not the rule. Any good wheat land will do for apples or pears; it is all the better if it has a mixture of clay in it. And all good corn land will produce good peach trees, climate being favourable. Of course good surface drainage is necessary, and under drainage highly advantageous, to the successful cultivation of fruit or any other crop. Subsoil plowing is a very great benefit to a young orchard, and should be done before planting, as it can never be so well done afterward. Let any one be assured that fifty trees well planted and cared for are worth more than five hundred stunted, moss covered ones, and in ten years give more bearing trees.

It is really distressing to see a lot of young



trees struggling for existence in a field of blue grass or Canada thistles, browsed off by cattle or barked by sheep, while it is indeed a pleasure to see a thrifty young orchard growing up under one's careful management, and in a few years it will repay any generous treatment it may have received. But a neglected orchard is a subject of constant reproach and always ends in pecuniary loss.

I am glad to see such active exertions being made to establish a fruit growers' association for Upper Canada. It is a society eminently required for the wants of the country, and I feel confident from the names already connected with the enterprise that it will prove a success. The information that it has already diffused in regard to some fruits being hardy in certain localities and not hardy in others, is especially interesting to those intending to plant, and if attended to by them may save much expense and disappointment.

Since writing the above we have been visited with a very severe storm of sleet accompanied with a high wind. That veritable individual the "oldest inhabitant" never recollects of so much ice being on the trees, small twigs of last year's growth were loaded with icicles of an inch and a half in diameter. Of course such a load swayed by a heavy wind made great destruction among trees, but the older peach trees were the greatest sufferers, I think fully one half the bearing wood of such trees is destroyed, while the younger ones though not so badly broken are sadly mutilated.

R. N. BALL.

Niagara, March 20th, 1862.

### On the Failure of the Apple Trees in the neighborhood of Montreal.

*A Communication to the Committee of the Natural History Society of Montreal.* By JOHN ARCHBOLD.

(From the Canadian Naturalist and Geologist.)

The failure of the apple trees in the neighborhood of Montreal, and I believe in all the Island, is a sad calamity as regards domestic luxury, as well as in a commercial point of view. I have seen Montreal in its palmy days of apple-growing, export its thousands of barrels of Pommes Grises, Bourassas, and Fameuses. These were the principal sorts sent to Europe, the refuse of which as well as the great quantities of the wild apples, that is apples from seedlings, always found a ready market at Quebec and the ports below it, at remunerative prices. With these facts before us, it is not to be wondered at, that strict enquiry should be made by all who feel the least interest in the culture of the apple, as to the cause of its decay. I have been a resident in Montreal since 1832, and for the last twenty-five years have lived on the south-eastern slope

of the Mountain, on the Cote St. Antoine road, and have acted in the capacity of gardener at Mount Pleasant, the then residence of the late Joseph Savage Esq.; also at Rosemount, the residence of the Hon. John Young, and subsequently at Forden, the residence of Capt. R. T. Raynes and of the late Charles Bowman Esq.; one of the most zealous friends and supporters of Horticulture, in his day, that Montreal could boast of. All these places were noted for the production of fine varieties of the apple, the pear, and the plum. The latter place, Forden, in particular, used to yield about fifteen years ago, from 1,000 to 1,500 lbs. of fruit, but the last three years have made sad havoc with the trees, and unless some reaction in the growth take place, there will not be one of the old trees living, three years hence. I noticed the decline of some sorts of the apple twenty years ago. I had a talk with the late Henry Corse Esq., about that time, on the failure of the Early Harvest apple, and he was under the impression that it was then extinct about Montreal, but I convinced him that it was not, for in each of the above mentioned places, I had seen trees of the Early Harvest which gave from three to four barrels of good apples, but these few trees are, I have every reason to believe, now gone. There were also the Ribston Pippin, (much on the decline these last ten years,) the Keswick Codlin, Hawthornden, Grant's Major, John Richardson; but these and some others, I always looked upon as being tender, from the softness of their wood, which is not nearly so hard as that of the Bourassa, Pomme Grise, and Fameuse, and therefore, do not wonder at their destruction. These latter sorts have, however, for the last ten years been declining in vigor of their growth, and size of their fruit. I was for some time under the impression from what I could learn from some gardeners, and other cultivators of fruit, that the above named three sorts of apples, would not bear fruit in any other locality than in the Island of Montreal, but that impression was completely removed on visiting the Provincial Exhibition held at Brantford, C. W., some years ago. I saw there as fine specimens of the Bourassa as Montreal could produce in its best days. At Hamilton I also visited some of the gardens, and there to my surprise, I found the Pomme Grise, Fameuse, and Ribston Pippin, growing side by side, and loaded with fine fruit, with not the slightest appearance of decay. These remarks, however, are by the way; the point of discussion at present is the cause of the decay in the apple trees in the vicinity of Montreal. There will, no doubt, be a great many opinions put forth on the subject, and some light will, I hope, be thus thrown on both the cause and the cure. Were the decay confined to one place, one kind of soil, or one mode of pruning or culture, there would be less difficulty in discovering both the cause and cure, but when we find the decay in one fell swoop,

taking off the whole of the young orchards that have been planted within these fifteen or twenty years past, and that even the old *savage*, as the Canadians call it, that has stood the severity of the winters for the last fifty years, is suffering the same fate, the difficulty of giving an opinion is all the greater. When also it is observed that apple trees both in the most sheltered nooks and on the bleakest exposures, on the best alluvial soil, and on the gravelly and limestone rock, all alike share the same fate, the necessity of careful consideration is much increased. I noticed in several of the apple trees, after the severity of the winter three years ago, that many of the large limbs became disordered by their cellular tissues not admitting that uniform and free flow of sap to the outer extremities of the branches, which was necessary for healthy growth. The consequence was, that there remained in the trunk an overflow of sap, and some very severe freezing nights coming at the time, the sap froze, and caused the outer bark to burst; the trunk soon after presenting a black and decaying appearance. This is one of the causes to which I attribute the decay.

I have also observed in gardens and orchards, at a season when the trees are in full vigour of flower and foliage, that they have been completely denuded of their leaves by the ravages of the caterpillar; thus being left bare to the influence of a June sun, their health and vigour were seriously impaired. I have observed that trees which suffered so, for two years in succession, hardly ever recovered from the effects of it; this is one other cause to which I attribute the decay of the apple. To avoid injury to the trees, care should be taken as to the time of pruning. When this is done in the beginning of March, or, as is sometimes the case, before that time, and wounds are left bare, without any cover or protection, the influence of a hot sun by day, and hard frost by night, is such, that these wounds emit a portion of the sap, and cause the parts affected to become black, a sure forerunner of decay. In my humble opinion, that work should be deferred till later in the season. My reason for forming this opinion is, that I have observed in my practice of budding, which commences about the middle of July, for stone fruits, and continues all through August for the pear and the apple, having to cut and prune the stocks to a considerable extent, I always found the wounds, at that season, to heal up very quickly, and leave no trace of black, such as might be seen in early spring pruning. Another cause of decay, seems to me to be some kind of atmospheric agency, for I have frequently noticed a portion of the branches of apple trees, becoming black in parts where there were no wounds. Sometimes at the junction of the lateral branches with the main branch, and sometimes near the outer extremity of the branch. Some persons attribute the appearance to lightning, but that appears to me rather

doubtful, for although thunder and lightning are common in the summer months, in Canada, I never noticed any parts of apple trees to be blackened to the extent they now are, until these last four years past. There might, indeed, occasionally have been symptoms of decay in some trees, and in certain localities, but the cause in such cases was easily accounted for. This commonly occurred when trees were planted in hard blue sub-soil, saturated with water at all seasons of the year, without the least attention being paid to drainage. On consulting any of the British authors who have written on the culture of the apple, they will all be found to agree that the soil should undergo a thorough preparation previous to planting, and that it should be trenched at least to the depth of two feet. If such preparation is an essential in such a mild climate as Great Britain, it is much more so in Canada, where we have frequently such a long continuance of drought in the summer, and severe frost in the winter. I have often been struck with the short life of the apple trees about Montreal. There was an impression made on my mind, in early life, that the apple was a long lived tree. I have known apple trees in the west of Ireland, in the neighborhood of the town of Sligo, to attain the age of 150 years, and then to be bearing good crops of apples. I also find that A. J. Downing, one of the most reliable and best American authors, in writing on the long age of the apple tree, says he saw in Rhode Island, two trees 130 years old. He, however, reckons our fine garden sorts to live only from 50 to 80 years. Now, I question if we could find about Montreal any of our fine garden sorts half that age, that is 40 years old. He also strongly recommends trenching the soil, and says it adds greatly to the long life of the trees. I must confess that I have not seen that proper attention paid to fruit trees in the neighborhood of Montreal which they require. I have seen, in many cases, trees planed on the green sward, without any other preparation than simply making a hole and putting in the tree; leaving it afterwards to take care of itself. In such cases the result may be easily conjectured. In taking up numbers of both pear and apple trees, the heads of which were dead, I have found that their roots were generally perfectly sound, not showing the least symptom of decay below the surface. The cause of decay does not therefore lie with the root.

The question often occurs to me, shall we ever see Montreal producing the fine fruits that it had twenty-five years ago? The markets were then filled to overflowing with the finest varieties of the plum and the pear, and a pretty good quantity of the peach and apricot, of open wall culture. Now there is no such thing to be found as a good Bon-chretien pear, or an Autumn Bergamot, or a Burmese Spruce, or yet a luscious Bolman's Washington plum, or a Greengage, or even a coarse Magnum Bonum;



and but seldom will you find a good basket of the common wild red plum of the country. I have also noticed a decline in the vigour and growth of several other plants, these last few years past, in comparison with what might have been seen twenty years ago. Then I saw the gardens about Montreal produce enormous crops of melons, with very little care or attention; now it is uncertain if you can get a good crop with all the care you can give them. I have also seen good crops of grapes raised in the gardens and have myself raised at Mount Pleasant, good crops of the Sweet Water and Black Cluster in good condition, in the open ground. Then there was no such thing as the mildew, or the nip, as it is now; nor was that troublesome pest, the curculio, known about Montreal. Yet with all these facts before us, it will not do to be idle lookers on; better to be up and doing. I would suggest that any man possessed of land, whether little or much, should plant trees according to his means, and let what is planted, be planted in the best possible way, and under the best conditions of the soil and culture. He may then hope for good results in time to come.

These few remarks, hastily penned, are respectfully submitted to the Montreal Natural History Society.

Forde, 6th January, 1862.

## Fruit Growers' Society of Western New York.

### ANNUAL MEETING.

The Fruit Growers' Society of Western New York held its Annual Meeting at the Court-house, in the city of Rochester, on the 8th ult. The meeting was large, and its discussions interesting and harmonious.

#### BEST FORM FOR AN APPLE TREE.

*V.—What is the best form of an Apple tree, and which is the time for pruning?*

Mr. SHARP thought he might not agree with others in his views of pruning. Would head all fruit trees low. Branches pruned near the ground are more vigorous and stocky than those formed further up the main stem. They show a disposition to ascend instead of running out horizontally, make a good spreading top, and can bear more weight without injury. Trees trained in this way are also less exposed to the winds. This is particularly the case with pears.

Mr. FISH agreed with Mr. Sharp. Branches pruned near the root are stronger than those formed six or seven feet from the ground.

Mr. HOOKER considered the question a difficult one. Trees grow naturally of all forms. The Northern Spy has an upright growth, Greening

crooked and drooping, while the Baldwin makes a round-headed tree. Cut out the young wood from a Tompkins County King, as is desirable for a Northern Spy, and soon there would be no bearing wood left. The variety requires shortening, while the Northern Spy requires thinning out. It is well to study the habits of trees, for, do the best we can, they have their peculiar shape.

Mr. MOODY said they had come to some system of culture that would suit farmers. Farmers would not use the fork. He found no evil from ploughing. Commence ploughing when the trees are young, and the roots will not come near the surface. Would form heads four or five feet from the ground. Some tender trees have the bark injured by the sun in winter. This is prevented by growing branches low.

Mr. BEADLE said the climate in which trees are grown may have a good deal to do in determining the form of the tree. Mr. MOODY spoke of the sun burning the trunks of trees. Had seen the same frequently in Canada, the bark injured for seven or eight feet up the trunk. Thought it the effect of the sun followed by hard frosts. By keeping the head low the trunk is protected. Never saw any ill effects from heading trees low. In Canada they have severe south-west winds. Every tree leans. The main crop is blown off high trees. Mr. B. would not use a plough under or near the trees, in an orchard. The roots like to come near the surface for air and dew. Use a cultivator.

J. J. THOMAS had made a good deal of observation in the length of roots. The radius of the roots is equal to the height of the tree. If the tree is twenty feet in height the roots will extend twenty feet from the trunk in every direction. Mr. T. enquired if any one had ever known injury to result from ploughing an orchard? The tearing of the roots a little, he thought, not so injurious as neglecting to stir the soil. Apple roots, many of them, go down low, but peach roots lie near the surface.

Dr. SYLVESTER said it is necessary to shade the trunks of trees, and it is also necessary to keep the tree growing to obtain good fruit. To effect this it is necessary to keep the ground well cultivated, and it is hard to do this if the head is formed very low.

At the close of the discussion on this subject members were requested to prepare and leave with the Secretary a list of the best six summer, the best six autumn, and the best twelve winter varieties. The following is the aggregate vote:

#### Best Six Summer—Two Sweet.

|                  |    |                |    |
|------------------|----|----------------|----|
| Red Astrachan    | 12 | Summer Pernaia | 2  |
| Primate          | 10 | Early Joe      | 3  |
| Early Harvest    | 8  | L. well        | 1  |
| Early Strawberry | 8  | Banoni         | 8  |
| Keswick Codlin   | 2  | Sweet Bough    | 12 |
| Summer Rose      | 5  | Golden Sweet   | 8  |

*Best Six Autumn—Two Sweet.*

|                            |    |                          |   |
|----------------------------|----|--------------------------|---|
| Colvert.....               | 2  | Munson Sweet.....        | 7 |
| Twenty Ounce.....          | 10 | Fall Tenetting.....      | 1 |
| Gravenstein.....           | 9  | Twenty Ounce Pippin..... | 1 |
| Duchess of Oldenburgh..... | 7  | Pumpkin Sweet.....       | 1 |
| Porter.....                | 7  | Maiden's Blush.....      | 1 |
| Jeffies.....               | 8  | Fall Pippin.....         | 2 |
| Pomme Royal.....           | 3  | Sylvester.....           | 1 |
| Beauty of Kent.....        | 2  |                          |   |

*Best Twelve Winter—Two Sweet.*

|                            |    |                       |   |
|----------------------------|----|-----------------------|---|
| Rhode Island Greening..... | 13 | Minister.....         | 1 |
| Tompkins Co. King.....     | 12 | Smith's Cider.....    | 1 |
| Northern Spy.....          | 12 | Norton's Melon.....   | 1 |
| Baldwin.....               | 12 | Canada Reinette.....  | 2 |
| Tolman Sweet.....          | 14 | Bine Parnain.....     | 1 |
| Spitzenburgh.....          | 8  | Raul's Janet.....     | 2 |
| Golden Russett.....        | 5  | Seek-no-further.....  | 2 |
| Roxbury Russett.....       | 7  | Green Sweet.....      | 3 |
| Peck's Pleasant.....       | 7  | La Tes Sweet.....     | 5 |
| Yellow Bellflower.....     | 7  | Cooper's Market.....  | 2 |
| Pomme Gris.....            | 4  | Cranberry Pippin..... | 1 |
| Canada Red.....            | 5  | Ribston Pippin.....   | 1 |
| Swaar.....                 | 6  | Bailey Sweet.....     | 3 |
| Red Cheek Pippin.....      | 3  | Jersey Sweet.....     | 3 |
| Wagener.....               | 6  | Pound Sweet.....      | 1 |
| Belmont.....               | 2  | Hill Sweet.....       | 1 |
| Fameuse.....               | 7  | Pomme d'Or.....       | 2 |
| Rambo.....                 | 5  | Jonathan.....         | 1 |
| Vandervere.....            | 1  | Mother.....           | 2 |

Mr. BARRY announced that among the distinguished fruit growers present, he was happy to observe the Rev. J. Knox, the celebrated Fruit Farmer of Pittsburgh, who has two hundred acres in fruit, and fifty acres in strawberries. The President requested Mr. K. to favour the meeting with an address.

Mr. Knox stated that as he had more experience with strawberries than any other fruit, and without pretending to make an address, he would give the members the benefit of his experience in strawberry culture, treating of soil, preparation of soil, cultivation and varieties. He considered a rather light clay soil best for strawberries. The first work in its preparation is through drainage, next breaking up or pulverizing, from twenty to twenty-four inches in depth. This is effected by the plough alone. First use an ordinary plough, with two horses, followed by Mapes' lifter, a kind of sub-soil plough, with two yokes of oxen. Give the ground several ploughings in different directions, until it is well broken up and pulverized. Could produce two or three very good crops on land ploughed in the ordinary way, eight or ten inches, but on that two feet deep could obtain ten or twelve crops in succession. Strawberries do not require much manure. Any good wheat or corn land is good enough for strawberries. Plants in rows thirty inches apart, and the plants ten inches apart in the rows, making twenty thousand plants to the acre. When he commenced strawberry culture, Mr. K. ploughed between the rows, but latterly has discarded all implements in his strawberry plantations, except the hoe. Weeds are taken out by hand. The less soil is disturbed after planting the better, as the whole ground is covered with a network of small, fibrous roots. Never allows the vines to bear the first year planted, but picks off all the fruit stems and runners, and removes the runners

every year that the plant is fruited. Prefers setting out early in the spring. Protects the plants in winter by wheat or rye straw, thrashed with the flail. Oat straw is not heavy enough, and blows off. Plants bear much better for this protection. The straw is removed in the spring, and placed around the plant's as a mulch, and helps a little towards furnishing manure. One half the straw is wasted each year, and needs to be supplied every autumn. Two tons to the acre is about the right quantity of straw to commence with, but after that, one ton of new straw each season will answer. Varieties that succeed in some soils and situations, fail in others. The Hovey is good in Boston, and Mr. K. had seen it good in Cleveland, but with him it never succeeded. Some varieties seem to run out after culture a number of years. Pistillate varieties do better when impregnated with some staminate sorts, than with others. On this subject he is trying experiments. The strawberry season ought to be lengthened. It is usually about three weeks, but with proper selection of sorts, can be extended to five weeks. The sorts Mr. K. liked best were the following:

EARLY.—Baltimore Scarlet, Jenny Lind, Burr's New Pine.

LATE.—Trollope's Victoria, Kitley's Goliath, Nimrod, Buist's Prize.

MEDIUM.—Brighton Pine, Boston Pine, McAvoy's Superior, Scott's Seedling, Moyamensing, Downer's Prolific, Fillmore, Golden Seeded, British Queen, Vicomtes Hericart de Thury, Wilson's Albany, Triomphe de Gand.

*The Apiary.**Ants.—To Keep Away from Hives.*

When hives are properly constructed, ants cannot get into them to propagate their young. They frequently, however, get into hives in consequence of not being properly constructed, and do much injury as they annoy the bees, injure the hive by eating into the wood, and will eat the honey if accessible. It is very little trouble to drive and keep the ants away from the hive, although much trouble has been experienced by many, for the simple reason that they knew no remedy. *To drive the ants away from the hive*, or out of their retreat, direct upon them a small quantity of the smoke of wood or tobacco. Each one will usually shoulder a number of their young, and "secede" instantaneously! *To keep the ants away from the hive*, apply, as soon as they have mostly disappeared, thinly in places where they frequent, with the feather part of a quill, the *spirits of turpentine*; they will not be seen again, in general, during the remainder of that season; but should they return, repeat the application. This preventive is very simple as well as efficacious; try it.—M. M. BALDRIDGE, in *Bee Journal*.



**PROFITS OF BEE-KEEPING.**—Mr. R. H. Davis, a practical farmer, and one of our subscribers, who has a large and well-managed farm at Larone, in Somerset county, furnishes us with the following notes relating to the profits of his small apary during the year of 1860. In the spring of that year, Mr. Davis had four swarms, which being wintered through, he valued at five dollars each, or twenty dollars. These four swarms sent out during the season ten new swarms, eight of which were worth in the fall four dollars each, or thirty-two dollars. The other two swarms had not honey enough to winter on. It was, therefore, strained and sold, (thirty pounds), as ten cents per pound, which amounted to three dollars. From the eight new swarms Mr. Davis sold two hundred and fifty-eight pounds of box honey, at twelve and a half cents per pound, amounting to thirty-two dollars and twenty-five cents. There was also some wax made, not taken into account. The old stocks of bees were reckoned at four dollars each in the fall, the same as the new swarms. This gives a clear profit of \$67.25 from four swarms in one season. Who can give a better account from so small a lot of bees?—*Maine Farmer.*

## Editorial Notices, &c.

**SECOND ANNUAL REPORT OF THE PROVINCIAL BOARD OF AGRICULTURE, NEW BRUNSWICK.**—We are indebted to Jas. G. Stevens, Esq., Secretary of the Board of Agriculture in the sister province, for a copy of the interesting volume under the above title. It contains a statement of the doings of the Board during the years 1860 and 1861; Essays on Agricultural subjects; Reports of Committees, &c. &c. Appended is the Report of the first Provincial Exhibition held under the superintendence of the Board, in 1861, from which we may learn that great progress has been made in Agriculture, manufactures, and arts, and generally in developing the great natural resources of the province, giving good grounds for sanguine expectations of the future. We shall be happy to hear of the continued progress of the agricultural, as well as all other important interests in the neighbouring province.

**FIFTH ANNUAL REPORT OF THE SECRETARY OF THE MAINE BOARD OF AGRICULTURE, 1860.**—We always welcome the Agricultural Report from the State of Maine, edited by the accomplished and able Secretary of the Board of Agriculture, S. L. Goodale, Esq., as amongst the most valu-

able of the publications which come to our table. Amongst the contents of this volume is placed the able treatise by Mr. Goodale on the "Principles of Breeding Domestic Animals," which we had previously received, and noticed in a separate form. Besides the usual reports of proceedings of the Board, and abstracts of returns from the Agricultural Societies of the State, there are also essays on Sheep Husbandry, Underdraining and Deep Tillage, Irrigation, Practical Entomology, &c. &c.

**COUNTY OF PETERBORO'.**—By the courtesy of the Rev. V. Clementi, President of the Peterboro' Horticultural Society, we are in possession of a neat pamphlet entitled "An Exhibit of the Progress, Position and Resources of the County of Peterboro', Canada West, Based upon the Census of 1861, together with a statement of the trade of the town of Peterboro';" by Thos. White, Jr. This little compilation makes a useful and convenient hand-book of reference for those interested in that county, and also contains some interesting information in regard to the progress of the new settlements in the rear of that part of the country.

Some of the above-mentioned publications have been received a considerable time, and we have to apologize to the donors for accidentally omitting to notice them sooner.

## Imported Thorough Bred Cattle FOR SALE.

**THE SUBSCRIBER OFFERS FOR SALE,** the whole of his lately imported herd of improved Short horns. Full pedigree for each, authenticated by reference to Coates's English Herd Book.

G. W. PHILLIPS,  
Ogdensburgh, N.Y.

March 6th, 1862.

ai4

## IMPROVED BERKSHIRE PIGS

**FOR SALE** by Mr. Denison, Dover Court, Toronto.

Toronto, April, 1862.

**A Thorough Bred 2 Year Old**

## AYRSHIRE BULL

**FOR SALE,** by Mr. Denison, Dover Court, Toronto.

April, 1862.

## GEORGE LESLIE, NURSERYMAN.

OFFERS FOR SALE, THIS SPRING, A GENERAL assortment of Nursery Stock, consisting of

|                              |     |  |
|------------------------------|-----|--|
| Apples, Standard and Dwarfs, |     |  |
| Cherries, do,                | do. |  |
| Pears, do,                   | do. |  |
| Plums, do,                   | do. |  |
| Peaches, do,                 | do. |  |
| Appricots and Nectarines,    |     |  |

## GRAPE VINES,

NATIVE AND FOREIGN.

CURRENTS, GOOSEBERRIES, RASPBERRIES, BLACKBERRIES, STRAWBERRIES, &c., &c.

The collection of fruits cultivated is extensive, and embraces all the different varieties that have been found of value, as well as those of late introduction.

The ornamental department is also extensive, consisting of Shade Trees, Shrubs, Roses, Hardy Herbaceous Plants, &c., &c., with a fine collection of Evergreens.

## LARGE TREES

FOR

### STREET PLANTING,

can be supplied, as also Evergreens, and Deciduous Plants for Hedges.

All the above are of FIRST QUALITY. Packing for a distance carefully performed by experienced hands.

All orders by post or left at the Nursery, will have prompt attention.

Catalogues forwarded gratis on receipt of 2 one cent. stamps.

Address **GEORGE LESLIE.**  
Toronto Nurseries.  
Toronto.

TORONTO NURSERIES,  
April 1862.

## Seeds! Seeds!! Seeds!!!

**JOHN GEORGE WAITE,**  
181 High Holborn, London, England.

HAS THE LARGEST STOCK OF VEGETABLE, AGRICULTURAL, and FLOWER SEEDS, IN THE WORLD, and can supply dealers on better terms than any other wholesale house, as he makes most extensive arrangements with none but experienced growers to produce his supply of seeds, which are raised and grown from stock selected under his own personal superintendence, and as they are all cleaned and picked in his own extensive warehouses by an auxiliary strength of several hundred men and women, kept for that purpose, he is enabled to recommend, with the greatest confidence, every description of Seed offered by him for sale, and he therefore invites Seed Dealers to apply for his Catalogue.

TERMS—Cash, or satisfactory references in England.

March, 1862.

6t.

## Fresh Garden, Field, & Flower Seeds.

FOR SPRING SOWING.

**JAMES FLEMING & Co**, Seedsmen to the Agricultural Association of Upper Canada, beg to inform their friends, and the Farmers of Canada generally, that their stock of Fresh Seeds is now complete and very extensive, embracing almost every kind of seed suitable for the country. The stock of Agricultural Seeds is large and well selected. The vitality of each sort is carefully tested, and their genuineness may be fully relied upon. A large stock of Peas, Timothy, and Clover:

Spring Tares,  
" Wheat,  
Black and White Oats.  
Swede Turnips, Purple top.  
" " Green top.  
" " Laing's Improved.  
" " Skirving's Improved.  
White Globe Turnip.  
Yellow Aberdeen "  
" Altringham "  
Waite's Eclipse Turnip.  
Stubble or Six Weeks "  
Mangel, Long Red.  
" Long Yellow.  
" Yellow Globe.  
" Red Globe.  
" New Olive Shaped.  
Sugar Beet.  
Field Peas, several varieties.  
Marrowfats, " "  
Barley, two and four rowed.  
Buckwheat.  
Indian Corn, several varieties  
Alsike and White Clover.  
American Orchard Grass,  
Kentucky Blue Grass.  
English Rye Grass.  
French Lucern.  
Cow and Rib Grass.  
Carrot, White Belgian.  
" Long Orange.  
" Altringham.  
Parsnip, Hollow Crowned.  
&c., &c., &c.

Also a full and general assortment of all kinds of Garden Seeds: a Catalogue of which, with directions for sowing, can be had on application. Agricultural Societies ordering Seeds, will be supplied on liberal terms. Country Merchants supplied with complete assortments of Garden Seeds on Commission, neatly put up in boxes of 200 papers each, for retailing at five cents a paper. Also a large assortment of Flower Seeds, embracing the novelties of the season.

No. 126 Yonge Street, Toronto.

March, 1862.

4-t.



## Agricultural, Horticultural, &amp;c.

The following Books on these subjects to be had at

BAIN'S BOOK STORE,  
46 KING STREET EAST.

|                                           |        |
|-------------------------------------------|--------|
| Dadd's Modern Horse Doctor, cl.....       | \$1 00 |
| Do. American Cattle Doctor, cl.....       | 1 00   |
| Greenon's Treatise on Milch Cows. cl. .   | 60     |
| Mayhew on the Horse, 8mo. ....            | 2 50   |
| Youatt & Martin on Cattle, 12mo.....      | 1 25   |
| Youatt & Spooner on the Horse.....        | 1 25   |
| Clater's Cattle Doctor, 12mo.....         | 1 25   |
| Clater's Farriery, 12mo.....              | 1 25   |
| Stewart's Stable Economy, 12mo.....       | 1 00   |
| Miles on the Horse's Foot.....            | 50     |
| Thomson on the Food of Animals.....       | 75     |
| Dogs and their Management by Mayhew.      | 63     |
| Milburn on the Cow.....                   | 25     |
| Martin on Cattle.....                     | 38     |
| Youatt on the Horse.....                  | 25     |
| Martin on the Sheep.....                  | 25     |
| Dayle on Domestic Poultry.....            | 1 50   |
| Watts on the Poultry Yard.....            | 25     |
| Pigeons and Rabbits by Delamee.....       | 25     |
| Martin on the Pig.....                    | 25     |
| Boussingault's Rural Economy.....         | 1 25   |
| Dama's Muck Manual.....                   | 1 00   |
| Sibson's Agricultural Chemistry.....      | 38     |
| Johnston's Agricultural Chemistry.....    | 1 25   |
| Johnston's Elemens.....                   | 1 00   |
| Burn's (R. S.) Hints for Farmers.....     | 25     |
| French on Farm Drainage, 12mo.....        | 1 00   |
| Flint on Grasses.....                     | 1 25   |
| Langstroile on the Honey Bee.....         | 1 25   |
| Neil's Fruit, Flower and Vegetable Garden | 1 00   |
| Bridgeman's Kitchen Garden.....           | 60     |
| Buist's Family Kitchen Garden.....        | 75     |
| Fessenden's American Kitchen Gardener     | 25     |
| Thomas' American Fruit Cultu rist.....    | 1 25   |
| Field on Pear Culture.....                | 1 00   |
| Barry on the Fruit Garden.....            | 1 25   |
| Coles' American Fruit Book.....           | 50     |
| Allen on the Grape Vine.....              | 1 00   |
| Chorlton's Grape Grower's Book.....       | 50     |
| Leuchars on Graperies.....                | 1 25   |
| Saunders' Orchard Honsel.....             | 40     |
| Pardee on Strawberry Culture.....         | 60     |
| Buist's Flower Gardener's Directory.....  | 1 00   |
| Breck's Flower Garden.....                | 1 00   |
| Johnson's Lady's Flower Gardener.....     | 25     |

Any of these Books can be sent by Post to any part of Canada, upon remitting the price and at the rate of 20 cents on the Dollar for postage.

Toronto Feb. 28, 1862.

4 t.

## FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,  
Dover Court.

Toronto, Aug., 1861.\*

## BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

Toronto, 1861.

HUGH C. THOMSON,  
Secretary.

## Notice of Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

## NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

## FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several pure Durham bull calves to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the well known DUCHESS tribe, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—First come, first served.

Waterdown, Nov. 14, 1861.

4-t.

## THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.  
Jf.

JOHN SNELL,  
Edmonton, P. O., C. W.

**VETERINARY SURGEON.**

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

**FOR SALE.**

**A FEW PURE-BRED SOUTH-DOWN RAMS**  
and Ewe Lambs, from

**IMPORTED STOCK,**

Selected from the Best Flock-dealers in Dorset, Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

JOHN SPENCER,  
Brooklin, Post Office,  
Ontario County C. W.

Oct. 12th, 1861.

**THE****JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,****FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**Contents of this Number.**

|                                           | PAGE. |
|-------------------------------------------|-------|
| Cultivation and Preparation of Flax.....  | 193   |
| The Composition, &c., of Milk.....        | 204   |
| Steam Cultivation, Its Rise and Progress. | 209   |
| Rot in Sheep.....                         | 213   |

**AGRICULTURAL INTELLIGENCE :**

|                                      |     |
|--------------------------------------|-----|
| Shows to take place this Spring..... | 215 |
| Removal of Mr. W. H. Lock.....       | 216 |

**HORTICULTURAL :**

|                                               |     |
|-----------------------------------------------|-----|
| Fruit Prospect in Niagara Township.....       | 216 |
| On the Failure of Apple Trees at Montreal     | 217 |
| Fruit Growers' Society, Western New York..... | 219 |

**THE APIARY :**

|                                    |     |
|------------------------------------|-----|
| Ants, To keep away from Hives..... | 220 |
| Profits of Bee-keeping.....        | 221 |

EDITORIAL NOTICES, Advertisements, &c 221

**FOR SALE.**

**A** LOT of thorough bred **Essex Pigs**,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmor, Galt P. O., Oct. 19, 1861.

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars; Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
Canadian Agriculturist,

OR  
JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, APRIL 15, 1862.

No. 8.



The Alderney or Jersey Cow.

The breed of cattle, termed Alderney, has long been known as belonging to the Channel Islands, a small group which lie near the shores of France, but pertaining to the Crown of England, being the sole remaining appanage of the ancient Duchy of Normandy.

For many years large numbers of these cows have been exported to England, where they are much esteemed for the peculiar richness of their milk, and the large amount of excellent butter which it yields. The breed somewhat varies in the different islands, but the animals belonging to it may be generally described as small and

ill-formed, particularly in reference to fattening. In this respect they exhibit a striking contrast to the larger and more widely diffused breeds, such as the Durham, Devon, Hereford, &c., &c.

"The cow is greatly below the male in strength and stature: her neck is thin, her shoulder light, her chest narrow, and the belly large. The limbs are slender, the pelvic bones prominent, the lumbar region is deep, the croup short and drooping, and the udder large. The muzzle is narrow, the horns are short, slender and curving inwards. The colour is usually of a light red or fawn, mixed with white; but frequently

individuals are black, mixed with white or dun, and sometimes cream-coloured. The skin is thin, and of a rich orange colour, and the fat, as well as the milk and butter, is tinged with the same colour. The animals are gentle, and somewhat delicate in constitution. Being small in size, the milk they yield is small in quantity, although fully in proportion to their bulk of body; and it is viscid and exceedingly rich in cream. In their native islands the steers are used for labor, to which they are better adapted than, from the slender form of the dam, might be inferred."

In these rich and picturesque islands land, according to French customs, is very much subdivided, and the agriculture resembles in many respects that of Belgium, that is, very garden-like. "The cow, in an especial degree, is the subject of the care of these island farmers. She is penned in a narrow space, and shifted to fresh spots of herbage several times in the day, and in the nights of winter she is warmly housed, and, when about to calve, is nourished with cider. Through all the year these little cows are to be seen in their patches of meadow, often under the shade of the apple trees, and so fastened that they cannot raise their heads to pull the fruit. In addition to their herbage, they are fed with lucerne, clover, carrots, parsnips, and the large Jersey cole, the leaves of which are stripped off as they grow. A value is here attached to the cow greater, perhaps, than in any other part of Europe. She is the resource of the household for food, and her surplus produce is a part of the returns of every farm. A Jersey man, it is said, will treat every animal on his farm with neglect except his cow. To preserve the purity of the race, an act of the insular Legislature was passed in the year 1789, and yet subsists, by which the importation into Jersey of any cow, heifer, calf, or bull, is prohibited under the penalty of 200 livres, with forfeiture of the boat and tackle, and a further penalty of 50 livres is imposed on any sailor on board who does not inform of the attempt. The animal itself is to be immediately slaughtered, and its flesh given to the poor."

The island of Alderney is too small to allow of any large exportation of these animals, the principal part of which come from Jersey, which exports about two thousand annually. These

are the small, fine, and handsome sort, the favourite colours of which are the dark tan, and the lemon and white. The *Guernsey* cow is larger, coarser, and harder, but there is not that dependence on the purity of the breed as in the Jersey cow. In Jersey, as before mentioned, no other animal is allowed, upon any pretence, in the island; while in Guernsey the law is not so stringent. Then the *quality* of produce is believed to be better in the Jersey than the Guernsey.

A recent writer of high authority remarks as follows:—"All Channel Island cows, and also very many from the adjoining coast of Brittany, are sold in England under the general name of 'Alderneys.' There seems to be important differences between the cows of the different islands. Those which are really bred in Alderney are the smallest,—then the Jersey ones; the Guernsey animals are the largest. There is a great jealousy between the islands about the superiority of their own cows. The Alderney people stoutly maintain the superiority of the animal which has (rightly or wrongly) given a name to the breed; whilst the contest between Guernsey and Jersey rages on hotly upon this moot point as upon many others. Whatever may be the rights of the question, however, it is certain that Alderney can spare very few cows for exportation. There are not 400 head in the island, and the number annually spared from this stock is under fifty. Jersey exported 1,138 cows and heifers in 1860; Guernsey not half that number. Many cattle are shipped at Brittany, and the skippers, calling at Jersey or Guernsey upon some pretence to get customs' papers there, bring their live stock on to England, and sell them for Channel Island cattle. This is a fraud, for they may be bought in Brittany at from £4 to £5 a head, but a genuine Alderney will fetch from £14 to £18. In spite of the enthusiasm with which the merits of the Alderney cow are supported by her admirers, there are some who maintain that in-and-in breeding has done its work in effecting a deterioration of the animal. They point to the fact that in Alderney, where the purity of the breed is most conservatively kept, the animals are smaller. They declare that in Brittany, by the system of in-and-in breeding, a race of diminutive cattle has been obtained still smaller



than the Alderney cow. As for the superior productiveness of the breed, they maintain that it does not exist, or that at least it is the result of constant pampering, such as would be quite inconsistent with an extended system of agriculture. Arguing in this way, they conclude the main merit of these cows is that they are beautiful little animals, whose chief attraction consists in their comparative scarceness; and that the high price which they fetch is due rather to a fancy than to any accurate valuation of their intrinsic worth. These opinions must be heretical to patriotic Channel Islanders, and are recorded, not because we agree with them, but because we have heard them upheld by persons who seemed entitled to attention. As for the charge of 'pampering,' one farmer's wife recommends a little cider to be mixed up and baked with bruised beans as the cow's food. In her opinion, it made them eat more heartily."

We are not aware that any of the Channel Island breed of cattle has been introduced into Canada, and but few, we believe, have found their way, as yet, into the United States. The cut prefixed to this article represents a cow imported from the island of Jersey, by Mr. Rowsell Colt, of Patterson, N. J. In England, these cows are principally confined to small dairies, belonging more particularly to amateurs or private gentlemen. One Alderney only among a dairy, or three or four cows, is found to materially improve the quality of the milk and butter. It is this tendency to convert the far greater portion of the food which they consume into the richest milk, that renders them so difficult to fatten. They are well worth a trial in Canada by private families who feel a special interest in the quality of the milk and butter which they consume; but great attention would be required during the severe weather of our winters with regard to feeding, cleanliness and protection.

#### Alsike Clover.

[From the *Irish Farmers' Gazette*. The Alsike is generally approved of in Canada, when it has been fairly tried.—Ed.]

Alsike clover (*Trifolium hybridum*), though introduced into the British isles nearly a century ago, and re-introduced several times since, has made but little progress in general cultivation as a forage plant. For many years it was chiefly cultivated as a curiosity in botanical col-

lections, but for some years back it has engaged more attention amongst the more enlightened of our agriculturists: for this purpose it has been cultivated from time to time by several; but from inattention to its *habitat*, so as to develop its excellencies, it has just as frequently almost been thrown aside, as not fulfilling the expectations formed of it.

It enjoys the name hybrid from the intermediate resemblance it has to the common red clover, *Trifolium pratense*, and white clover, *Trifolium repens*, which has given the idea that it is a hybrid or mule produced by a union between those plants; but in reality it is a perfectly distinct species from either, for though *Trifolium repens* and *Trifolium pratense* have been growing in close proximity for ages past in the British isles, there has been no instance on record where this species has been found or discovered in these countries. This fact, in our opinion, amounts to proof-positive that the plant in question has not been produced by hybridization, but that it is a perfectly distinct species.

It is reported to grow wild in Finland, Denmark, Sweden, Germany, France, Portugal, and Italy, and was first found growing with great luxuriance in ditches at Alsike in Sweden—hence the name of Alsike clover, given by some late introducers of the plant. Upon a close examination, it has not the most distant resemblance to *Trifolium pratense*: and it resembles *Trifolium repens* in but a partial degree. Its roots are fibrous and perennial, but the stem is not creeping and rooting at the joints like the white or Dutch clover; neither is the stem erect like red clover, but weak and branching; its leaflets are ovate, and slightly serrated; the flower heads are globular, and fixed on long peduncles; the colour of the flowers whitish and pink; and the seed vessels tetragonal. Having less deeply penetrating roots than red clover, it is not calculated for very dry soils or extended droughts. Being a more permanent plant than red clover, though it does not yield so heavy a crop, it is well suited for sowing in land that has become clover-sick, providing the land is deep and not too dry, its favourite soils being deep loamy and peaty soils, rich in vegetable matter, but stagnant wet is destructive to it. In such soils it grows to the greatest perfection, producing hay of the most nutritious description; retains its leaves, smell, and colour in curing; is reported never to become mouldy; and as either a hay or a green soiling crop is eagerly eaten by all descriptions of stock.

On rich, reclaimed moors or slob lands it is a most valuable plant, being much more permanent than red clover, and yielding a heavier crop than the white species. We saw this exemplified on the reclaimed slob land of Lough Foyle when the Royal Agricultural Society held their show at Londonderry, in 1858, very extensive breadths of it having been laid down

with this plant. It is therefore, highly useful and valuable on such land, producing both a soiling and a hay crop; while the white clover is of too prostrate and creeping a habit to be useful for anything but grazing. On the other hand, on dry arid lands it produces poorly, dwindles away, and finally perishes in drought; while the white clover retains its hold, and though it suffers in thin soils in point of drought, and, to all appearance dies, in very thin soils, it quickly recovers and grows luxuriantly when rain sets in, so that it depends on the judicious selection of the soil whether the cultivation of Alsike clover or any other plant becomes remunerative or not.

We have already stated that it was found growing luxuriantly in ditches at Alsike. This is a good guide to its cultivation, and we may safely infer that such a situation is its natural *habitat*, and that it requires a rich, sappy soil to bring it to perfection, but it must not be wet. On deep, alluvial soils and rich, well-drained, moory soils, it is a most valuable addition to our foddering plants; but on high, dry, or thin lands, richly laid down, though it may do well for a time, it will run out and lead to disappointment.

### Kohl Rabi.

[This valuable root has been successfully grown in different parts of Canada, and deserves to be more generally known. It is important that it should receive a fair and extensive trial. The subjoined remarks from the *Irish Farmer's Gazette* will be found interesting and suggestive.—Eds.]

Another farming crop that should be attended to at once, and should be more extensively cultivated than it is, is the kohl rabi. It is a long time since this plant has been introduced into these countries, more as a garden curiosity than anything else; but as a useful feeding plant for cultivation in the farm it has been very tardy in making its way. It thrives in almost any soil and in almost any climate. In India it is in much request as a rich and delicate garden esculent, and in many of the European continental countries it is in high esteem for feeding milch cows and other cattle. It is also most useful for feeding sheep, is perfectly hardy, and stands any amount of frost. It is the only plant that has been found really useful in filling up the blanks amongst swede turnips, and where that crop has been cut off by the fly it is the only plant that gives a certainty of a full crop by transplanting it, which is much better than sowing swedes or any other turnip again. For this purpose it should be sown thickly in beds as soon as pos-

sible; the earlier the better, so as to have good strong plants to put out by the end of May or early in June. By giving sufficient space the globular heads produced will weigh from 6 to 10 lb. each and upwards; the rows should not be nearer than 2½ feet, and the plants two feet apart in the rows. They may also be sown in drills any time in May, and treated in every way the same as turnips. Kohl rabi is not only perfectly hardy, but it bears accidental injury better than swedes; for while the latter, when wounded, quickly rots away, the former still remains sound. Experiments have been made by cutting and hacking both kohl rabi and Swedes side by side to ascertain this, and while the Swedes rotted away, the kohl rabi seemed nothing the worse. Hares and rabbits are particularly fond of the kohl rabi, and when found growing in the same field they reject everything else in favor of it while it lasts, as we repeatedly witnessed; and upon our recent visit to Rocksavage, the seat of C. Kenny, Esq., all the kohl rabi then in the fields was completely scooped out. Besides being a very superior farm crop, its leaves as well as bulbs are particularly useful in the kitchen; the former being sweet and palatable, and the latter, when well boiled and well macerated with milk and butter, being an admirable substitute for mashed turnips, and when advanced in the season being free from woody fibre that renders turnips useless as a table vegetable at that time of the year.

### The Course of Agriculture in the West.

Causes influencing the Present Prices of Corn—Freights to the Sea-Board—The East may compete with the West in the Production of this Staple—Northern *versus* Southern Illinois—Cotton Growing.

CHAMPAIGN, ILL., Feb. 1, 1862.

As there is an intimate relation existing between the producers of the East and the West, it is right and proper that they should be posted as to each other's doings. Within the past few years great changes have been made in the staple products of the country. The whale fisheries, once so extensive and profitable, were ruined by the discovery of lard oil, which, by the cheap corn of the west, could be procured at a cost below that of catching the whale; whale stock of the seaboard went down, and lard oil stock of the west went up, and the cornfields had a wider margin. Camphene and fluid, soon after lard oil had, as it was supposed, become the great *light*, yielded to their more brilliant display, and the greasy product of pork again found its level.

But as corn was directly appealed to for *light*, it was a matter of indifference to the



western farmer whether it was supplied directly from corn or its product, pork, so long as he held the monopoly of its production. But genius and Yankee perseverance did not stop here; and the coal mines were explored for more light, and they had just begun to yield it in the shape of kerosene, when the discovery of the oil wells burst upon the wondering west. Camphene, fluid and kerosene from coal were at once extinguished by the floods from the oil wells, and corn that had become the great staple not only for food, but light, had to give place in turn to the new power.

While *genius* was busy carving out a fortune for this new product, she was not unmindful of the great staple corn, and by new modes of culture and new implements so cheapened its cost that it retained an important place in commercial circles. Of late, in consequence of forcing a double amount of freight on the northern transportation lines, the price of this staple at the west has gone down below the cost of production, while at the seaboard it commands a pretty fair price. Should this state of things continue, corn will cease to be named among the agricultural staples arriving at tide-water from the west. The present price of corn at New York is sixty-two cents, and at Chicago twenty-two, showing a cost of forty cents for freight, at least double the ordinary rates. The average cost of placing corn in the Chicago market from the country stations is nine cents, that is, eight cents for freight, and one cent for selling. The buyer must have three cents for buying, shelling and shipping at the station, which leaves to the farmer just ten cents a bushel, only one-half of its nett cost of production, after allowing a fair price for the use of land, fixtures, etc. Now it is nonsense to suppose that farmers will continue to grow corn any great length of time at this rate; in fact but few farmers would have the ability to do it, even if they chose to make the attempt. The re-opening of the southern trade, or the re-opening of the Baltimore and Ohio railroad, with increased competition among the northern transportation lines must, at no distant day, bring down these enormous freights to a reasonable standard. It will be seen that a reduction of twenty-five per cent. will have the effect to keep up the supply, but if reduced to twenty cents a bushel, would leave a handsome profit to the western farmer. The ordinary lake freight is five cents a bushel to Buffalo, but last fall it was up to fifteen on an average; all we need ask to leave us the monopoly of corn is the reduction of the extra lake freight. We can see no reason why corn cannot be laid down in New York at less than the present price, and yet pay all parties a fair profit. With twenty-five cents at the country stations for shelled corn, the western farmer would be well satisfied, as that would leave him a round profit; the average freight to Chicago, eight cents, re-shipping, two

cents; to Buffalo, five cents, re-shipping, one cent; to New York, thirteen cents; insurance one cent—total fifty-five cents. As some one must be paid for advancing the money and looking after the shipment and sales we add for that purpose five cents a bushel, a sum ample in all respects. This will make the entire cost at which corn should be laid down in New York sixty cents a bushel of fifty-six pounds. With these facts before him the eastern farmer will know whether or not he can compete with the west in this staple, and meet his brother farmers of the prairie on change in the seaboard cities.

It is generally supposed that the whole of the State of Illinois is a great corn producing country, but such is not the fact. The northern counties seldom produce a surplus over the local demand, being more occupied with the culture of spring wheat and the products of the dairy. The south half of the State as often purchases as sells, and it is the central portion that produces the immense supply that has made the State famous for this great staple. The south part of the State is known as *Egypt*, and is valuable for the grape, the peach, and other fruits that require a long season and a hot sun. The climate corresponds with that of at least four degrees of latitude further south on the Atlantic slope, or equal to that of the Carolinas, north of Columbia, South Carolina, though from its inland position, subject to more sudden changes of weather. In the more southern portion of this section, the winter wheat harvest commences the 25th of May. It is therefore strictly within the cotton growing region, and extensive preparations are being made to try the effect of free labor with this crop. A large portion of the inhabitants are more or less familiar with its culture, and we have no doubt of its success. The great error with people settling in that part of the State, has been their ignoring the idea of the low summer latitude, that is so marked a feature in the climate. The general elevation of the country is three to six hundred feet above the level of the sea, and on the whole possessing a climate soft and delicious as that of Italy. This part of the State has never been appreciated, because not understood, but now the war, by stimulating the growth of cotton, of tobacco, and of sugar, in the more northern portions of the region adapted to them, will people that part of the State with an industrious and enterprising population.

The lands are among the richest, and as they can be purchased at a low price, we shall expect to see immigration directed to that interesting part of the west. The Germans of Western Texas have proved that cotton can be profitably cultivated with free labor. With these facts before us, we need have no misgivings of the result, when backed with northern industry, northern skill, and northern implements on the rich soil of the basin of *Egypt*.

Messrs. Editors, would you like a trip to the west—to visit the gardens of Chicago just as the cherry tree is sheeted with its mantle of white—pass south through the great corn zone, and feast your eyes on far stretching fields of thousands of acres of the springing blades—away down the prairie slopes into the basin of Egypt—drive among the fruit hills of the “Grand Chain,” amid orchards laden with the young fruit and fields of wheat nearly ready for the harvest, and with the forest full-robed for summer? Come, and we will show you the prairie state in its vesture of vernal flora and midsummer splendor, *all in May*. It will be no tiresome ride over plains, across which the iron rail had just been laid, with the cabin of the emigrant or an impromptu village to relieve the grey setting of the prairie, and over which the autumn fires had gathered up the gifts of summer. It will show you the difference between then and now, and between the more exacting climate of the Lake region and the genial skies of the Valley of the Mississippi—between the semi-tropical products of the thirty-seventh parallel, and the hardy cereals of the north at forty-two.

M. L. DUNLAP.

—Country Gentleman.

### The Composition, &c., of Milk.

(Concluded from page 209.)

#### METHODS OF TESTING MILK.

It has been at various times suggested to me to consider whether a really method of testing the quality of milk might not be devised. It is true that we have instruments—lactometers, as they are called—for ascertaining what is the quality of milk. But the instruments in use lead frequently to erroneous conclusions: they were based—most of them, at least, on erroneous principles. The common lactometer, which is in effect a float, like an ordinary spirit-float, when immersed in milk, indicates by its position the strength of that liquid. Milk which is more dense keeps the float higher: milk which is less dense allows it to sink lower. When water, therefore, is mixed with milk, the float will sink deeper. So it is said by those who constructed this description of lactometer. But there is one consideration which has here to be taken into account. It is this—that the butter in the cream is lighter than the whey of milk. Cream, I find by direct determinations, has a specific gravity of 1.012 to 1.019. It varies slightly. It is a little heavier than water, but lighter than the whey of milk, or skimmed

milk. Milk rich in cream would, therefore, be lighter than milk poor in cream. By this lactometer an extra quantity of cream in milk is indicated in precisely the same way as an extra quantity of water. In short, this instrument, which measures the density of milk, furnishes very incorrect results. I cannot, perhaps, make this clearer to you than by giving one or two determinations. In testing the specific gravity of good milk, I found it as follows: 1.03 to 1.032. By skimming off the cream the gravity is increased. The lactometer, again immersed in the skimmed milk, now rises five divisions, and indicates 1.037. But if I take off from this milk the cream, and then put 10 per cent. of water to it, I get again precisely the same specific gravity which the new milk originally indicated, namely, 1.032. I believe that the commonest adulteration practised in large towns consists in people taking off the cream, and then if the milk be particularly good, adding a little water. This is not indicated by the common lactometer. Indeed, this was pointed out some time ago, and persons have in consequence sought to construct a lactometer on totally different principles. If the milk is put in a graduated glass and allowed to settle, some of the cream rises, and the quantity can then be read off. In good milk I find from 10 to 12 per cent. of cream by volume; in poor milk there is sometimes as little as from 6 to 7 per cent. of cream. Although this instrument (holding it up) does not give absolutely accurate results, yet it gives more useful results than I was first led to believe it would. It also gives results which are comparable. There are a number of tubes to compare the cream-producing qualities of milk; and these might easily be put together in one piece of apparatus in a rack or box. I have here a case which may, if necessary, be filled with cold water. The tubes are graduated from the top, indicating the amount of cream which collects after the milk has been for some time standing. Temperature has, as is well known, an influence on the separation of the cream, but not so great an influence, as I find by experiments, as is generally believed. When the temperature is about 50 degrees, most of the cream is separated from the milk in from 18 to 24 hours. A small quantity only remains in the skimmed milk; about 7-10ths of a per cent. of fatty matter remains in it. However long you may keep milk at rest, it is impossible to separate the cream completely, but the greater portion separates in about 24 hours, and if the process be conducted at a temperature of about 50 degrees longer time than 24 hours will not separate an appreciably larger quantity of butter. I have kept milk in this instrument for 36 hours without getting a larger quantity of cream. This, however, is not quite conclusive, for the cream may get denser the longer it stands. It becomes denser when the temperature is increased; it diminishes slightly in quantity when the tempera-



ture is increased to 70 degrees; but under such circumstances the cream becomes denser. In comparative experiments like these, it is well to maintain as nearly as possible an equal temperature. It is also desirable to shut out the influence of the air. This may be done very well by means of a tin case in which 3 or more lactometers may be placed. The milk may be kept cold by cold water, and a thermometer inserted in the tin-case to indicate the temperature. [The lecturer here showed practically how this might be done.] In comparing these two methods with each other—the one which collects the amount of cream, and the one which gives the gravity or density of milk—it has struck me that a more correct result might be obtained if two instruments were used together; one to measure the amount of cream and the other to take the density of the skimmed milk. Milk skimmed and watered will give at once little cream, and show a low specific gravity; whereas, milk which was merely skimmed and not otherwise watered would give a higher specific gravity than milk in its natural condition, but would give little cream. People using both instruments would be in a position to say at once, "This milk is watered;" or, "It is otherwise good milk, but the cream has been removed." When large quantities of milk have to be supplied to work-houses or public institutions, it is very desirable to have a ready mode of testing its quality. It might be arranged that when the milk comes in, some of it should be placed in graduated tubes, and at the end of twenty-four hours, the skimmed milk could be drawn off, and a float put into it. This float might be so constructed as to give the proportion of water in the milk from 10 to 12 per cent. I purpose to make a number of analyses of milk purposely mixed with water, and to construct a set of two instruments with a view of assisting in the solution of this practical question, and testing in a ready way the quality of milk. I believe the thing can be done with some care and trouble. When the ordinary lactometer, which measures the amount of cream in the milk, is used, practical difficulty is experienced in removing the cream. You might do it with a pipette; but unless you have a very steady hand indeed you cannot get all the cream off: at any rate, the servants in a large establishment could not be expected to do it. I have, therefore thought of using an instrument similar to the alcalimeter of Dr. Moore, analytical chemist of Coblenz. It is a very handy instrument, which is frequently used for many purposes in chemical laboratories. It consists of a graduated tube divided into one hundred parts, each of seven grains, the whole being the hundredth part of a gallon. You will, by this means, get a proportionate part of a gallon. The milk is filled in, and then left-four and twenty hours. The cream rises, and can be

readily let off. [The Professor gave a practical illustration with the apparatus.] The whole operation is very simple. The specimen which I have here seems to be an exceedingly good milk, it contains no less than fifteen measures of cream. I put the sample here that I might be able clearly to exhibit the process. It is rarely that you get such a large amount of cream. If in London milk you get eight or nine measures of cream, you must be satisfied: very frequently you will get only seven, and even six measures. You can see distinctly [referring to the graduated tube] the line which separates the cream from the skimmed milk. The milk is prevented from flowing out by a list of India rubber tubing, which is pressed together by a kind of clasp, which opens the tube on applying pressure to it. By this means the skimmed milk may be drawn off with the greatest ease. After that a float is used to ascertain the specific gravity. The instrument which gives the specific gravity might be so constructed as at once to indicate ten, twenty, forty, or fifty per cent. of water in the milk. By means of this arrangement you get an idea of the quality of the skimmed milk, and are able to ascertain whether or not it is poor and thin; and you also measure off the quantity of cream. I am at present endeavouring to ascertain whether the cream is of anything like uniform composition when gathered in this way. If it be so, we might thus form an idea of the amount of butter which can be produced by a given quantity of milk; and in large dairy establishments which cannot be superintended by the owner, very great services might, I think, be rendered by enabling him to ascertain at once what amount of butter he might fairly expect from his dairywoman. There is another description of lactometer, or milk-tester, as it is called, which is simply a graduated cylinder, by which the milk is kept from the influence of the atmosphere, and which in other respects resembles these graduated tubes. In all ordinary tubes in which the graduation begins at the top there is this practical inconvenience, that the skimmed milk cannot be removed by such a simple arrangement as that which I have described. I have lately directed my attention to the construction of a good milk-tester. There are various things to be taken into account, which I am engaged in investigating. For instance, I am endeavouring to ascertain whether the quantity of cream which is thrown off in a small-bore tube is larger or smaller than that thrown off in a large-bore tube—whether, in fact, size makes any appreciable difference in the volume. So far as I have gone I have not found any great difference in the volume of cream which is thrown up in graduated tubes of different diameter. Thus far, the indications are favourable; and I hope, at no very remote period, with the assistance of Mr. Griffin, the manufacturer of chemical apparatus, to produce a practically useful set

of lactometers. With these remarks on milk-testing I will conclude this lecture, and thank you for your kind attention. (Cheers.)

Mr. Beale Brown said he felt great pleasure in moving a vote of thanks to Professor Voelcker for the able and interesting lecture which he had just delivered. Perhaps the most interesting portion of the lecture was that in which it was shown that an increase in the quantity of food did not necessarily lead to an increase in the quantity of milk. He had found by his own experience that it was possible to give additional food to his cows, which tended to fatten them, without making any difference in the quantity of cream. He wished to ask the Professor one or two questions, and he should feel obliged by his answering them. He said it was impossible to separate all the cream from the skimmed milk. Would he state whether the practice of scalding milk, which was practised in Devonshire, did not produce a complete separation? He wished, also, to enquire what, in the Professor's opinion, was the effect of gorse on milking-cows. In the *Irish Farmers' Gazette* it was stated that the use of gorse greatly increased the quantity of milk; and if that were so, it might be well to resort to gorse at a period of the year when other kinds of food were not abundant.

Professor Voelcker said, as regarded gorse, although he had made an analysis of it, he was not practically acquainted with its influence upon dairy stock. From what he knew, however, of its composition, and of its practical effect in the case of horses, he was inclined to think that it might be given with great advantage to dairy stock. In some parts of Scotland, waste lands which did not bear anything before are now cultivated entirely with gorse, intended for horses; and he was inclined to think that a food which was given usefully to horses, being a concentrated food, might also be given with advantage to dairy stock. With regard to the other question, he had no doubt that the scalding of milk would throw up a little more cream; but no amount of boiling would effect a complete separation. Even in the clearest whey, when the curd was separated from the milk there remained a certain amount of cream suspended.

Lord Feversham, in seconding the vote of thanks, said, although the Professor's treatment of it was important, there were some interesting parts of the question into which he had not entered, and upon which information might naturally be desired. As regarded the analyses and experiments which had been mentioned, he must remark that, unless comparisons were made between animals of the same kind, it was very difficult to draw satisfactory conclusions. They all knew that the Alderney cow gave much less milk than the Shorthorn, but that, at the same time, the milk yielded a great deal more cream and butter. They had not heard anything on that occasion with regard to the Devon and Hereford breeds.

The Chairman observed that Professor Voelcker stated distinctly that his comparison was between three Shorthorns and three ordinary dairy cows.

Lord Feversham continued: there could be no doubt that grass-fed cows would in summer yield an abundance of milk if the pastures were good, and that the butter would generally be of good quality. As regarded winter keep, they might, no doubt, easily feed cows with too much oil-cake, and so injure their milking properties and diminish the quality of cream; but he supposed the Professor did not object to their being fed on roots, mangold wurzel, or Swede turnips. Turnips might sometimes impart a taste to the milk, and therefore to the butter; but he (Lord Feversham) certainly considered mangold wurzel early in the spring an important and essential element in the feeding of milch cows. That root would not generate too much fat in the animal, and it would, he believed, rather increase the quantity of milk. The noble lord concluded by expressing a hope that the lecture would at once go forth to the agricultural public generally.

The Chairman remarked, that some years ago the subject of the composition of the milk of dairy cows was before under discussion. A great desire was then expressed for some means of securing the cream without the process of skimming; and it was suggested that that might be done by means of a syphon.

Mr. Moore thought he gathered from Professor Voelcker that the three Shorthorns and the three dairy cows of which he spoke were kept out at grass during the analyses.

Professor Voelcker said both sets of cows were out at grass, and remained under the same circumstances during the experiments.

Mr. Moore; The result of giving cake to both classes of animals was, that it lessened the quantity of milk yielded by both.

Professor Voelcker: Exactly so.

Mr. Moore thought he also gathered from the lecturer that the size of the vessel in which the milk was placed, whether it was large or small, did not increase or lessen the quantity of cream. Some years ago considerable discussion took place as to what should be the shape and size of milk-pans. He should like to know whether the Professor thought that any particular shape, or any particular depth of pan, would affect the quantity of cream which a given amount of milk would yield. Some years ago he (Mr. Moore) made some experiments with respect to the produce of Alderney cows, Shorthorns and Herefords, and the results were very satisfactory. He tested the milk in various ways, using a syphon, referring to the dates from the time of calving, and so on, and he found the quantity of milk in the case of these different breeds of animals very uniform, although there was a considerable difference in quality.



Professor Voelcker, in reply, said the question with regard to the proper depth of milk pan was answered by the experience of good dairymen. They found that shallow pans were the best; such pans threw up more cream than the others, and kept the quality of the milk better. The temperature was better regulated, which was very important, because when milk became heated it soon spoilt. It was quite an erroneous supposition that the access of air was injurious. The freer current of air there was through a dairy the better. What was injurious to milk was damp air. He was glad to see in the room a gentleman from Sweden, Professor Muller, who could, if he pleased, give them some interesting information with respect to the mode of keeping milk in that country. In a little book, published by a gentlemen in Sweden, there was a plan mentioned which consisted simply of keeping milk in shallow vessels of peculiar shape and handy construction, and admitting the air freely to it; at the same time you might make a fire in the dairy whenever one was required; and the author stated that whenever he saw a thunder storm approaching, instead of keeping his milk cool, he had a fire lighted to drive off the additional moisture.

Mr. Cantrell said the kind of pan which he had found best was a common earthenware pan, with a yellow glazed lining inside.

Professor Voelcker remarked that the great point was to have a shallow pan, with a perfectly smooth surface.

Mr. Blackburn said that he had always found that a small depth of pan threw up the largest quantity of cream, especially in warm weather. Milk would not keep so long in warm weather as in cold; and the sooner, therefore, the cream was thrown up, the better. In summer he invariably adhered to a pan of 1½ inches in depth and in winter to one of 4 inches. On that plan, the cream was thrown up much quicker, and the skimmed milk did not remain sufficiently long to acquire acidity. He had found that bean-meal produced a greater quantity of milk than any other kind of food. He had used it largely: and on comparing its effects with those of rape-cake and linseed-cake, he had found that it contained a larger amount of flesh-making principles than those substances, and not so much oil. He should like to learn why there was such milk-producing power in bean-meal.

Professor Voelcker said it contained a considerable quantity of starch. It was a fact borne out by experience, that bean-meal produced a large quantity of butter.

Mr. Blackburn said another substance which he had found to produce a large quantity of milk was grains, or draft. He supposed that it contained a large quantity of phosphoric acid.

Professor Voelcker: Yes, and lactic acid. It contained a large quantity of phosphate of lime, which was held in solution. A certain amount

of grains was exceedingly useful for dairy stock, and so also was bran.

Mr. Blackburn said he had fed largely with bran. There was great difference between linseed and rape-cake. Linseed gave a very unpleasant smell; whereas rape-cake was more like grass land in its effects. The explanation might perhaps be, that the oil in rape-cake more resembled the oil in butter than the oil of linseed-cake resembled it. As regarded lactometers, he had used them for several years, and had encountered the difficulties to which the Professor had alluded. He would ask him whether some plan had not been devised for ascertaining the opacity of milk, or rather, the resistance which a column of milk offered to the passage of a ray of light, and measuring it? Was not that a good test?

Professor Voelcker observed that there was such a lactometer; and it was altogether erroneous in principle.

Mr. Blackburn observed that milk was very much injured by travelling a long distance, the cream being so diffused in the milk, that it would not rise.

Professor Voelcker could easily understand that. The milk globules were quite broken in travelling; their contents were diffused through the whole mass, and consequently it was more difficult for the cream to rise.

Mr. Blackburn considered the keeping milk cool a very important point. He had to send a large quantity of milk twenty-five miles by railway, and if it arrived in a coagulated state it would be unfit for consumption. Formerly it was his practice to have the milk placed in the pans just as it came from the cows, at a temperature of about 60 degrees, and he had frequent complaints of the quality of the milk. He then made several experiments, with a view to improvement. Eventually he tried the plan of putting milk in refrigerators, and bringing down the temperature to that of water. The plan entirely succeeded; and since its adoption he had not had a single complaint. It was exceedingly important that milk should be kept as quiet as possible, and should be placed in pans, for transmission, before it was quite cool.

### On the Composition and Feeding Value of the Straws of the Cereals.

BY THOMAS ANDERSON, M.D., F.R.S.E.

Nothing is more striking than the increased importance which straw has acquired in the modern practice of agriculture as a food for fattening cattle. Under the old system it was employed almost entirely as fodder, and when it was occasionally added to turnips, it was given less with the idea of any advantage to be derived from the nutritive matters it contained than with the view of correcting the too watery

character of that root, and thus facilitating rumination, promoting digestion and rendering it more valuable. In many parts of the country the property of using it in this way even was questioned, and it was never resorted to except in times of scarcity, when other and more nutritive food could not be obtained. Nor is this opinion at all surprising. We are in the habit of considering the moisture and more succulent varieties of food as the most nutritive, and with them the dry and woody straws contrast unfavourably; but they do so not so much on account of the absence of nutritive matters as on their less valuable condition, due to the large amount of woody fibre by which they are protected from the action of the gastric juice, and enabled to pass through the animal in an undigested state. Hence it is that straw, when used alone, must be described as comparatively an in-nutritious food, and was naturally and justly considered to be inferior to hay, which, in the last century and the earlier part of this, was the staple food of fattening cattle. At that time the amount of the hay crop was in fact, the measure of the number of cattle which could be fattened on any farm; but the turnip immediately increased this number, and as its cultivation could be extended more than the hay crop, and the increasing price of meat added to the profits, it was pushed to the extreme, and it then became necessary to use straw to mix with the watery roots. As the advantages of this course became obvious, both in the increased quantity of fat stock, which could be sold off the farm, and the abundance of manure it afforded for the other crops, every inducement was offered to persevere in it, and the consumption of purchased food commenced and rapidly advanced. As most of these foods are of foreign growth, it was, of course, profitable to import only those which contain abundance of nutriment within a small weight, and hence again straw became necessary for the purpose of adding to the bulk of these substances, and enabling the stomach to dispose of them in a more satisfactory manner than it would otherwise do; for a very concentrated food which does not sufficiently distend that organ may pass through the intestines to a great extent undigested.

Such is the history of the use of straw in fattening cattle, and with its extension many questions of interest have arisen. It is now admitted that its nutritive effect is much higher than was formerly supposed, but we are still without any definite information as to its value compared with other feeding substances, such as turnips and the like; and further, as to whether there is any and what, difference between the straws of the different grains and of the same grain grown under different circumstances. It is generally understood that oat straw is superior to either barley or wheat, and it is also believed that the soil and other circumstances have a very important influence upon their feeding

qualities, while it is also possible that there may be an appreciable difference in the straw of different varieties of the same grain. It is sufficiently obvious that a complete reply to all these questions would involve the analysis of many hundred specimens of straw, extending over a considerable period, so as to eliminate the effect of season, which in a single year is very apt to mislead. Still in the present imperfect state of our information a more limited inquiry will be of use; and it is hoped that the following investigation may prove an acceptable addition to our knowledge of this important subject.

In carrying out this inquiry it was of primary importance to devise some method of analysis suited to bring out the differences I wished to detect, and for this purpose the ordinary methods employed with oil-cakes, the cereals, &c., and which answer perfectly well for these concentrated substances, are of comparatively little use. They are founded upon the principle of determining the total amount of the different great classes or sections into which the nutritive elements of plants are divided. Thus, for example, in wheat we determine the amount of albuminous compounds, as measured by the nitrogen, of respiratory principles, and of oil, and in this case, when each group actually consists almost entirely of one substance, the information so obtained is amply sufficient. Thus, in wheat the albuminous matters consist almost entirely of gluten, and, the respiratory of starch, and the whole grain is easily digestible. But it is quite otherwise with a straw, where our object is not only to discover what substances are there, but also what proportion of them is likely to be available to the animal and to be assimilated by it in the process of digestion. It then becomes necessary to separate from one another the assimilable and non-assimilable substances, and this touches upon one of those points in chemical analysis which are in an unsatisfactory and imperfect state, and which require and merit further study. I commenced, therefore, by directing my attention to these points, and bestowed upon them a large amount of time, and performed a number of experiments, the results of which it is unnecessary to detail here. The general conclusion to which I came was, that though it might be possible to devise processes by which the proximate principles might be separated in some substances, it would not be practicable in all. Moreover, it did not appear that the separation of each of these compounds would throw any clear light upon their relative digestibility, and that, in the present state of our knowledge, it would be better, as well as safer, to restrict ourselves to a more limited analysis, though still more complete than those usually made.

It is obvious that if a food contains a considerable quantity of any nutritive element, as albumen, for example, but from some peculiarity in the condition in which it is present only a por-



tion, say a half or a third, can be assimilated, the value of the food is to be measured by that portion only, and not by the whole. The more nutritive foods are valuable not merely on account of the large proportion of useful substances they contain, but also because they are easily accessible to the animal. Thus in the turnip by far the greater part of its nutritive matters is soluble in water, little more than 2 per cent. of its weight being insoluble in that fluid, and of this small quantity a considerable proportion is dissolved by the juices of the stomach. In the cereals, although but a small proportion is directly soluble in water, the chemical changes they undergo during digestion convert them easily into a condition in which they can be absorbed. But it is quite otherwise with straws. In them the chief nutritive matters are partly soluble and partly insoluble in water, and they contain besides a large proportion of inert woody fibre. It will be easily understood that the substances soluble in water will be readily assimilated by the animal; and even those which are insoluble might, and probably would, also be taken up if it were not for the woody fibre which surrounds and protects them, and if it does not altogether prevent, must certainly greatly diminish the chances of their utility. Even in the most valuable food but a small proportion of the nutritive matters present is assimilated, and does not admit of a doubt that the portion soluble in water, or that which is most readily converted into a soluble state, will alone be absorbed.

In straws, it may be fairly anticipated that the soluble part is likely to be of use, and that the other portion, though it may, if rendered soluble, become useful, is so thoroughly protected from the action of the gastric juice by the woody fibre in which it is enveloped that in all probability it generally, if not invariably, escapes assimilation. In consideration of these facts it appeared to me that all the necessary requirements would be fulfilled by determining separately the quantities of each group of nutritive elements contained in the straws which are soluble and insoluble in water.

In following out this view of the matter, I at first attempted to effect the separation by macerating the straw in cold water, but it was soon found that in this way only a small quantity of soluble matters could be obtained, unless they were left in contact for a long time, and then a species of fermentation was apt to occur, which entirely altered the straw, and defeated the object in view. On the other hand, boiling water was inapplicable, owing to its producing coagulation of some of the albuminous compounds. After some trials a temperature of 140 degs. Fahrenheit was adopted, and was found sufficiently high to ensure the extraction of all soluble matters, without running the risk of rendering any of the albuminous compounds insoluble. The first

fluid obtained in this way, by adding to the straw about ten times its weight of water, was brownish coloured and slightly mucilaginous, and contained the greater part of the soluble matters. Three or four subsequent additions of water were found sufficient for their complete extraction. The total amount of soluble and insoluble matters was thus determined, and the proportions of soluble and insoluble albuminous compounds were ascertained by determining the total nitrogen and the amount left in the insoluble matter. Owing to the bulky nature of straw, and the small proportion of nitrogen, this required very great care, and duplicate experiments were made, with closely corresponding results.

*Wheat Straw.*—Samples of wheat straw, of good ordinary quality from East Lothian and from the neighbourhood of Midhurst in Kent have been examined.

|                        | Mr. Harvey,<br>Whittingham, | Mr. S. Skirving,<br>Camptown, Kent. |        |
|------------------------|-----------------------------|-------------------------------------|--------|
| Soluble in Water—      |                             |                                     |        |
| Respiratory elements   | 2.63                        | 6.63                                | 5.26   |
| *Albuminous compounds  | 0.86                        | 0.37                                | 1.37   |
| Ash                    | 3.38                        | 1.55                                | 4.97   |
| Insoluble in Water—    |                             |                                     |        |
| Oil                    | 0.80                        | 1.00                                | 1.50   |
| Respiratory elements   | 44.88                       | 36.43                               | 38.79  |
| †Albuminous compounds  | 0.51                        | 1.12                                | 1.00   |
| Woody fibre            | 32.88                       | 34.78                               | 35.01  |
| Ash                    | 2.82                        | 6.19                                | 1.35   |
| Water                  | 10.62                       | 10.91                               | 11.16  |
|                        | 99.43                       | 99.35                               | 100.39 |
| *Containing nitrogen   | 0.139                       | 0.06                                | 0.220  |
| †Containing nitrogen   | 0.082                       | 0.18                                | 0.160  |
| Total nitrogen         | 0.221                       | 0.21                                | 0.380  |
| “ albuminous compounds | 1.37                        | 1.49                                | 2.370  |
| “ respiratory elements | 47.56                       | 43.11                               | 44.050 |

In examining these analyses, it is impossible to fail being struck by the small proportion of matters soluble in water which wheat straw contains. Excluding the ash, they amount in the first sample to no more than  $3\frac{1}{2}$  per cent., and in the other two to 7 and  $6\frac{1}{2}$  per cent. respectively. To these the large portion of soluble ash forms a very remarkable contrast, in two of the samples greatly exceeding the insoluble ash, and in the third (that from Camptown), though it falls short of the insoluble part, it must still be looked upon as proportionately large. The largest individual constituent in all these straws is the insoluble respiratory elements, and they materially exceed the woody fibre in quantity, a result for which I was not prepared. It is interesting to notice that, if we take the total albuminous and respiratory compounds, the difference between the specimens is by no means large, and the two East Lothian straws in particular are almost absolutely identical. It is only when the relative quantities of soluble and insoluble matters are taken into account that the difference becomes apparent.

*Barley Straw.*—Samples of barley straw were obtained from the same localities as the wheat

straw, and are here distinguished as numbers 1<sup>st</sup>, 2, and 3 :—

| Soluble in Water—      | No. 1. | No. 2. | No. 3. |
|------------------------|--------|--------|--------|
| Respiratory elements   | 3.22   | 6.11   | 4.56   |
| *Albuminous compounds  | 1.42   | 0.39   | 0.66   |
| Ash                    | 3.30   | 2.87   | 3.38   |
| Insoluble in Water—    |        |        |        |
| Oil                    | 0.97   | 0.88   | 1.05   |
| Respiratory elements   | 35.56  | 38.39  | 27.95  |
| †Albuminous compounds  | 1.54   | 1.12   | 1.98   |
| Woody fibre            | 41.34  | 36.62  | 47.53  |
| Ash                    | 0.91   | 2.75   | 1.47   |
| Water                  | 11.41  | 11.15  | 11.10  |
|                        | 99.70  | 100.27 | 99.68  |
| *Containing nitrogen   | 0.228  | 0.063  | 0.106  |
| † " nitrogen           | 0.217  | 0.180  | 0.317  |
| Total nitrogen         | 0.475  | 0.243  | 0.423  |
| " albuminous compounds | 2.960  | 1.510  | 2.640  |
| " respiratory elements | 38.780 | 44.490 | 32.510 |

In these samples the differences are far from inconsiderable. In the first the total percentage of albuminous compounds is about twice as great as in the other two, and it is nearly equally divided between the soluble and insoluble. In both the others the proportion of insoluble albuminous compounds exceeds materially the soluble. The total quantity is also larger than in any of the wheat straws, and there is likewise a considerable difference in the amount of respiratory elements and fibre, the latter varying from little more than one-third of the entire weight of the straw, in No. 2, to nearly a half in No. 3. It cannot be doubted that these differences must tell on the nutritive value of the samples, and that the first would, under ordinary circumstances, prove the most valuable, and the third the least so.

*Oat Straw.*—Owing to the great importance of oat straw, and its generally admitted superiority as a feeding substance, a larger number of analyses have been made of it than of the other grains.

|  | Sandy<br>Oat Straw—<br>Mr. Skirving. | Sandy<br>Oat Straw—<br>Mr. Harvey. |
|--|--------------------------------------|------------------------------------|
|--|--------------------------------------|------------------------------------|

| <i>Soluble in Water—</i> |       |      |
|--------------------------|-------|------|
| Respiratory elements     | 10.12 | 6.90 |
| *Albuminous compounds    | 0.40  | 1.03 |
| Ash                      | 3.97  | 5.01 |

| <i>Insoluble in Water—</i> |       |       |
|----------------------------|-------|-------|
| Oil                        | 1.45  | 0.77  |
| †Respiratory elements      | 33.52 | 34.77 |
| Albuminous compounds       | 0.93  | 0.43  |
| Woody fibre                | 35.36 | 38.73 |
| Ash                        | 2.39  | 1.27  |
| Water                      | 11.70 | 10.95 |

|                        |       |       |
|------------------------|-------|-------|
|                        | 99.84 | 99.93 |
| *Containing nitrogen   | 0.064 | 0.170 |
| † " nitrogen           | 0.140 | 0.090 |
| Total nitrogen         | 0.204 | 0.260 |
| " albuminous compounds | 1.16  | 1.56  |
| " respiratory elements | 43.64 | 41.67 |

Midhurst,  
Mellhill Kent(white  
Inchture. one side)

| <i>Soluble in Water—</i> |       |      |
|--------------------------|-------|------|
| Respiratory elements     | 12.01 | 6.23 |
| *Albuminous compounds    | 0.95  | 0.33 |
| Ash                      | 1.60  | 1.92 |

| <i>Insoluble in Water—</i> |       |       |
|----------------------------|-------|-------|
| Oil                        | 1.60  | 1.00  |
| Respiratory elements       | 23.35 | 30.95 |
| †Albuminous compounds      | 1.21  | 0.33  |
| Woody fibre                | 45.27 | 47.40 |
| Ash                        | 2.35  | 1.70  |
| Water                      | 11.70 | 10.55 |

|                        |        |        |
|------------------------|--------|--------|
|                        | 100.14 | 100.41 |
| *Containing nitrogen   | 0.156  | 0.052  |
| " nitrogen             | 0.211  | 0.052  |
| Total nitrogen         | 0.367  | 0.104  |
| " albuminous compounds | 2.27   | 0.66   |
| " respiratory elements | 35.36  | 37.18  |

Oat Straw  
grown 850  
feet above  
at sea level,  
E. Lothian. E. Lothian.

| <i>Soluble in Water—</i> |      |      |
|--------------------------|------|------|
| Respiratory elements     | 7.16 | 7.42 |
| *Albuminous compounds    | 0.67 | 0.92 |
| Ash                      | 3.84 | 2.91 |

| <i>Insoluble in Water—</i> |       |       |
|----------------------------|-------|-------|
| Oil                        | 1.25  | 1.36  |
| Respiratory elements       | 24.18 | 29.55 |
| †Albuminous compounds      | 0.38  | 0.39  |
| Woody fibre                | 48.94 | 44.40 |
| Ash                        | 1.27  | 2.16  |
| Water                      | 12.60 | 11.28 |

|                        |        |        |
|------------------------|--------|--------|
|                        | 100.29 | 100.39 |
| *containing nitrogen   | 0.108  | 0.150  |
| † " nitrogen           | 0.062  | 0.063  |
| Total nitrogen         | 0.170  | 0.213  |
| " albuminous compounds | 1.150  | 1.310  |
| " respiratory elements | 31.340 | 36.990 |

These analyses fully justify the preference accorded to oat straw in feeding, for all of them show a larger and most of them a much larger proportion of soluble matters than either wheat or barley. There is however, a very great difference between the samples; that from Millhill containing nearly twice as much soluble as some of the others. If this be taken as a measure of their relative values, then we should be induced to place that sample, and the sandy oat straw from Mr. Skirving, on a considerably higher level than any of the others; while that from Kent would stand lowest. And this conclusion is justified by practical observation. In fact, the specimen from Kent was sent me by Lord Kin



naired, for the purpose of ascertaining whether there was any difference in the consumption of it and of the straw grown on his home farm at Millhill, because he had found a very material difference in their feeding properties. The straws grown on the sea level, and at 850 feet above it were analysed for a similar reason; it having been stated by Mr. Harvey, of Whittingham Mains, that there is believed to be a difference in their feeding qualities. The analyses scarcely bear out this opinion, as far at least as these two samples are concerned; for though that from the high level is slightly superior to the other, the difference is so small that no conclusions can be drawn from it; indeed, specimens from different localities vary to a much greater extent.

Passing from these points to the more general considerations regarding the nutritive properties of straw, it must be observed that their value is much higher than might have been expected. The position in which they stand may be best rendered obvious by a comparison with the turnip. That root contains on the average from 1.2 to 1.4 per cent. of albuminous compounds, and 4 or 5 of respiratory elements, of which 3 or 4 are soluble in water. It will be observed, then, that, as far as nutritive matters are concerned, straws generally stand far above the turnip, surpassing it slightly in the albuminous, and enormously in the respiratory elements. As a source of these elements they must hold a very high position, and in this respect are surpassed only by the grains and some few other substances. When compared with roots and grains, however, a very marked difference may be observed between the relative proportions of these two great classes of nutritive elements. The ratio of the albuminous to the respiratory compounds is, in the turnip, as 1 to 3. In round numbers, and in the grains as 1 to 7. That is to say, for every pound of the albuminous compounds contained in a grain, as wheat for example, there will be about 7 pounds of respiratory compounds. In the straws, the proportions are very different, the total respiratory compounds being never less than ten, and sometimes nearly thirty times as abundant as the albuminous. If the soluble portion of these substances only be considered, then the ratio approaches nearer to that observed in the more concentrated foods, though on the whole the excess of respiratory elements is very marked.

Returning now to the comparison between the turnip and straws, it is obvious that though the latter greatly exceed the former in the amount of substances which may be absorbed, no one would for a moment think of asserting that straws are therefore of greater nutritive value. The reverse is undoubtedly the case, and the cause of this is to be found in several considerations. 1st. It must be attributed in part to the unsuitable proportion of those classes of nutri-

tive substances; for if highly nutritive substances, such as the turnip and grains, contain a relatively much larger proportion of albuminous compounds, then it may be expected that in the straw the small quantity of these substances will cause the assimilation of only a proportionate quantity of the respiratory elements, and the surplus will be waste. Hence also the use of highly nitrogenous foods, such as oil-cake and bean-meal, along with straw, must be considered good practice. 3rd. It may be fairly anticipated that the soluble portion of the nutritive matter will in general be of little, or possibly sometimes of no use. 2nd. Owing to the difficulty with which the soluble matters pass into solution in water, a considerable part of them may escape digestion. And in this respect the contrast between straw and turnip is very marked. In the latter the larger proportion of the constituents are not only soluble, but already dissolved in the 90 per cent. of water present, but in the former they are not dissolved, but are in the solid state in the dry straw, and must undergo the process of solution, which is effected during mastication and rumination. The difficulty of dissolving the soluble matters of straw in cold water has been already adverted to, and even when warm water is used the process is slow, and requires considerable time. From this it may be concluded that straw ought to be well moistened and steamed before being used. 4th. The large proportion of woody fibre existing in all straws must interfere materially with the production of the full effect of its nutritive elements.

Notwithstanding these drawbacks, the general conclusion to be drawn from this inquiry is, that straw, and more especially oat straw, possesses a very considerable nutritive value, but that it is most advantageously used along with the more highly nitrogenised foods. It must be observed, also, that in a mechanical point of view, it may even have its uses in the intestines, and by giving bulk and firmness to the mass of food contained in them, assist the process of digestion and absorption. Such are the conclusions to which analysis leads; and I will only add, that a minute and careful series of feeding experiments with straw, under different circumstances, would be a great boon to practical agriculture.—*Transactions of Highland Society.*

### The Farmer as an Observer.

It has long seemed to the writer that the greatest defect in agricultural literature, as in all other, is the want of originality. As said a gentleman of the Empire State, several years ago to the writer, "we have had what is known up over again and again by editors and contributors to papers, who have done nothing really to advance the art of farming and stock-breeding. What we most want is men who by experiments

accurately made and reported shall advance the knowledge of tillage beyond where it has stood for many years." There is still the same deplorable lack of originality in the literature of the farmer.

The query at once presents itself, how is this to be done? Not by reading the records of the past alone, however valuable they are, but by observing with critical care all the phenomena connected with vegetable and animal physiology, in relation both to the earth and the atmosphere, including everything that affects the condition of domesticated animals and cultivated plants. Books contained only the known, and so far as their contents are valuable and useful they report the exact processes of nature in regard to the subjects discussed. Let the reader learn to discriminate therefore between knowledge and theory; in doing so he will soon learn that there is a wide difference between knowledge and theory, between experiment and hypothesis, between fine talking and writing and working in the field, between actual observation and predictable assertion.

In christianity faith is a fundamental, and therefore an indispensable element. But in physics demonstration entirely precludes the necessity of faith, and therefore the reader of an agricultural paper desires, and especially so if he is a practical farmer, to learn what a man knows, not what he believes, or what he asserts from hearsay. Neither by many or by few words does a writer commend himself is what they desire, whether it be conveyed in many or to the real hungerers and thirsters for knowledge. Truth, few words. Some pride themselves on short articles, seeming to convey the impression or conceit that because they write short articles, *ergo*, they are good; also that long articles, because they are long are worthless. Such, however, is not the decision of the analytical reader, for he learns to judge of the contents of a paper not by the length of its articles, but by their quality. What a man knows, not what he believes or has heard, is what the farmer wants and seeks by reading.

The advancement of farm literature must depend upon the observations of practical farmers, and not upon the hypothetical speculations of mere theorists, writers or lecturers who know nothing practically concerning the subjects they write or talk about.

What would a city schoolmaster say of a farmer who never taught school a day in his life, who should write an essay on school keeping, dictating how a school should be organized and conducted? Away with such nonsensical speculations, would say the practical teacher. Before undertaking to teach others, first learn by experience in the schoolroom what cannot be learned anywhere else; then instruct the masters. In such a decision the teacher would be right.

But to reverse the picture. Suppose a city schoolmaster, known as the principal of a select school for young ladies, should attempt to write or compile an essay or manual on practical farming. What would the farmers be likely to say of it? They would say, just what practical schoolmasters would say, of those who know nothing practically about school-keeping, yet attempt to dictate by lectures or essays how to conduct a school. Just for a moment contemplate a city schoolmaster attempting to instruct practical farmers on the rotation of crops. *Nesutor ultra crepidam*, is a Roman maxim of general application and at once suggests itself. It is quite as absurd for a schoolmaster to teach the practical farmer the niceties of the art of conducting a farm, or of economical agriculture, as it is for the farmer to attempt to teach the practical schoolmaster the art of conducting a school.

Did Mr. Bakewell, an Englishman, and the prince of stock-breeders learn his art from a schoolmaster's manual on farming? Did the Messrs. Colling produce the improved Short-horns in a similar way? Or was it not rather by observation and experience united. They were careful observers and experimenters; and thus the Messrs. Colling and Mr. Bakewell produced results that have proved their claim to the noble honor of being benefactors of mankind. They did something to advance the practical art of cattle and sheep breeding. Men of like spirit and enterprise are now wanted in every other department of farming.

He who by experimenting learns how to grow the greatest amount of wheat, rye, corn, barley or oats per acre, with the least cost per bushel, will then be able to teach what every farmer wishes to know and what no farmer now does know. He also in the same way teaches how to grow annually that crop which is most profitable without regard to rotation of crops, by application of suitable fertilizers, will be entitled to a place on the scroll of fame, by the side of Bakewell and Colling, as a benefactor of his race.

To the same honor he will be entitled who teaches the cheapest method of making beef, mutton, pork and wool—any or all of these staple products. These lessons can only be learned by experimenters in the field and in the garden, among herds and flocks, and in breeding and feeding. Facts thus developed will furnish the material for making the science of agriculture, when they are all known. The facts in the possession of practical farmers to day, that have never found their way into any book or paper, are worth infinitely more to practical and economical farmers, than all that have ever been printed, from the times of Cato and Columella, down to the present time.

Farmers! will you furnish facts for the *Country Gentleman*, no matter how common, for



they are needed and are worth infinitely more than speculations, no matter by whom produced. Too often is it the case when a farmer is invited to write for an agricultural paper, that he thinks he must produce a studied essay on some topic, when only *his facts* carefully presented with all their surroundings, are wanted. Farmers must learn to observe and record their observations, for in this way is agricultural literature to be advanced.

MENTOR.

—Country Gentleman.

### Pleuro-Pneumonia.

[We regret to hear that this fearful disease among cattle is again showing itself in the New England States. Recent accounts from Australia and even New Zealand, represent its ravages as most extensive and destructive. The following communication from an eminent Veterinarian first appeared in the *Fifeshire Journal*, and which we take from the *Irish Farmer's Gazette*. Eds.]

SIR,—Every communication I see in the newspapers from veterinarians about pleuro-pneumonia would lead agriculturists and the public generally to believe that infection was the whole cause of the disease.

I have seen as many cases of pleuro-pneumonia for the last nine years as I think could come under the notice of any veterinary practitioner, from young calves to old cows—in town byres, villages, farm steadings, and open fields, were its spontaneous origin has often been observed. If you were to tell a party who had reared all his own stock, and which had never been in contact with any other animal, that one of his was affected with pleuro he would scarcely believe you. When the disease became so prevalent in this part of the country, if an animal was observed to show the least symptom of it, it was at once put out of the way, and every precaution taken to prevent contagion; yet the disease went on. One farm I know of was scarcely ever without it till the courts were drained and all covered in, after which not another case occurred for four years, although about fifty head of cattle were kept on it. I know several farms, one in particular, where the steading is close by the road-side, and where they rear mostly all their own cattle; when calves they are always grazed at the road-side, and often on the road where cattle have travelled in the worst stages of disease, day after day, and disease raging on every side of it, yet there has never been a single case on that farm.

I know an extensive farmer who bought a short-horned bull, which he placed in a loose box along with a heifer. The bull shortly afterwards became affected with pleuro-pneumonia,

and died in the same place after fourteen days' illness. There was a door which communicated with other cattle, and on the opposite side a byre containing about twenty milch cows; but another case never occurred on that farm for three years. Another farmer told me that he bought eight cattle and kept them by themselves for a fortnight, and as they appeared healthy he then placed them in a park beside other fifty. Shortly afterwards, however, they became diseased, and were ultimately sold at a great sacrifice; but not one of the fifty ever became affected. I attended a yearling which belonged to a small drofter, and was affected with pleuro. It recovered, and was shortly afterwards sold in the market to a farmer whose stock I had occasion to visit, and in the midst of which I observed the same animal without any bad result. On many farms single cases occur without going farther. Now, if the disease is so infectious as some writers would have us believe, how is it so many beasts escaped when placed in such circumstances? I kept a cow for six months, during which she travelled to and from her pasture on the road leading to the railway station, where diseased cattle were repeatedly going, and other cows beside mine, without any bad effect. I know that on a farm where there are two byres, each containing ten polled cattle, four in each byre became affected with pleuro-pneumonia. They were all removed after showing symptoms of disease, and treated for recovery. All the eight recovered, and as they began to get better, they were returned to their own stalls, and in the summer the whole twenty were turned out to graze in the park, and none of the other twelve ever showed the least symptoms of the disease. I knew of other diseased cattle that were disposed of, and three healthy ones immediately put in their place without any bad effect, although they remained several months till they were fat.

These agriculturists that have suffered most from it are beginning to think that we must look for other causes than contagion—a conclusion to which I also have come; and instead of selling their lean stock when they become diseased for little more than the price of their skins, are now treating them for recovery, and in many cases very successfully. I may mention that I have had both valuable short-horned bulls and heifers badly affected with pleuro that recovered, and afterwards produced healthy stock.

The question is often asked of a veterinary surgeon, "What is the cause of pleuro-pneumonia?" In my opinion, the first cause has been the great demand for beef, and the way in which that beef has been reared to meet the demand. On many farms there are too many calves reared for the amount of accommodation, and their milk not always of genuine quality. The moment the calves are dropped from their dams

they are tied by the neck, and for months together allowed no more room than to lie down and rise up again, breathing all the time an atmosphere nearly up to suffocation point. Thus, being without pure air and exercise, neither their lungs nor any of their other organs are ever properly developed.

There are four things necessary for laying the foundation of a good constitution—viz., good shelter, proper food, pure air, and exercise. Without these combined, predisposition to disease is the result. The want of exercise to calves predisposes them to joint ill, white scour, quarter ill, and pleuro; and a great number fall victims to these diseases every year. Where great attention is paid to the rearing of stock, it is seldom—at least so far as my observation, goes—that there is anything wrong, in comparison to the opposite plan of rearing without exercise and cleanliness. I would say one of the great existing causes has been carried on since cattle travelled so much by steam-boat and railway. They are driven to markets and often placed in trucks in a heated state, frequently remaining there for a whole winter night, and, with lungs so predisposed, they catch cold, which soon generates into disease. Also, in the extreme heat of summer, when cattle run so much in the heat of the day, their lungs become congested; then we have cold nights, they lie down on the damp grass, and pleuro is often the result.

If Mr. Gamgee would put agriculturists on the proper mode of rearing cattle to prevent disease, he should recommend them to give good shelter, proper food, pure air, and exercise in winter, and provide a protection to them in grass parks from the extreme changes in summer, and to be better sheltered in railway trucks, with fewer delays. If that were done, we would have less disease; and the Edinburgh dairy-man would have cows with better constitutions, if they would give them better accommodation.—I am, &c.

COLIN C. BAIRD, V.S.

Cupar, Feb. 26th, 1842.

### Management of Live Stock in France.

(From the American Stock Journal)

We spoke in our last number, of the superior productiveness of English over French Agriculture in respect both to the crops, and to the animal product; and gave the estimate of Lavergne that the yearly animal product of an English farm is, upon an average, equal to the whole product of animals and crops upon a French farm of equal extent! The main secret of this strange fact is, that in the English system of husbandry, immense crops of turnips and green fodder are produced and fed out to sheep and cattle on the farm, thereby enriching the land and sustaining a heavy stock of animals for wool, mutton and beef. For instance, a Lincoln-

shire farmer thinks his farm under-stocked with sheep, if he does not feed on it, on the average, one sheep to each acre. His thousand-acre farm produces usually two hundred acres of turnips, and the like area of vetches, rye-grass and clover, all of which is consumed by his own animals, and so the land is enriched for his wheat and barley crops which he sells. The French farmer allows much of his land to lie fallow after a crop of wheat, instead of raising a green crop, and so he has nothing to feed to his animals, and can of course keep but few of them. It is, however, at this time our purpose to examine more in detail the French system of management of domestic animals, comparing it as we do with that of England, to see what lessons of warning or example Americans may find in this department of French husbandry.

#### CATTLE.

It is estimated that France possessed in 1855, about ten million head of horned cattle, while Great Britain and Ireland had about two millions less; yet is believed, upon the highest authority, that British agriculture on an area of land of less than three-fifths that of France produces one-fourth more meat, and twice as much milk for dairy products!

This is an astonishing difference, enough to attract the careful attention of all thoughtful men who are interested in agriculture. We will endeavor briefly to suggest the principal reasons for this result. Four different objects may be sought by keeping horned cattle,—meat, labour, milk and manure,—and as one or the other of these predominates in the mind of the farmer, so he will vary his treatment of his stock,

#### WORKING CATTLE.

In France, as in America, oxen are worked in the yoke. We have often seen them in the south of France yoked with a straight piece across their foreheads strapped to their horns, drawing by their heads, instead of by their shoulders as with us, and were surprised to see that they handled their load apparently quite as easily as in our fashion. Nowhere, however, in the world have we ever seen, nor can there anywhere else be found, so large and fine specimens of working oxen, as in New England. In England, cattle are, in general, not kept for work, but are bred for beef and milk only. There, an ox is a gentleman of leisure and dignity, fed with the fat of the land from calf-hood to maturity. A speedy growth and great weight are the main objects. His duty is to grow fat and heavy, to do no labour, to take no thought for the morrow what he shall eat; but to grow into butcher's meat as speedily as he may. He need not wander over a hundred-acre pasture, picking among stones in a summer drought for a scanty subsistence. Clover fields to his knees, or rye-grass brought to his stall, or five bushels of turnips a day, with oil-cake to match, are his inheritance, and he is bidden to rejoice in his youth,



for he will never see any old age. The breed of cattle that will make the most oeff at three years old on the most abundant feed, is best for the south and middle of England, and this is no doubt the Short Horn. As soon as he attains his growth, his career ends in the shambles; and a growing animal takes his place. Incidentally, of course, this enormous feeder furnishes an immense quantity of manure, and thus enriches the farm.

Now in France, as in New England, the first duty of an ox is to work. He may grow large and fat if he can, but he must work. In order to work he must be hardy and active, and of substantial age. Two-year-olds and even three-year-olds have no stamina; and so working oxen must be kept till seven or eight years old, and in fact, in all countries where they are worked, they are kept long after their growth ceases to pay their keeping. Cattle bred for labor are, no doubt, rendered more hardy by ranging in pastures, than being kept in small inclosures, and perhaps their meat is more healthful; but this free sort of life does not lay on fat like stall-feeding.

Is it profitable to work oxen? In France cows are worked often upon the plow. Is this profitable? Lavergne sums up the matter as to France, as follows; and we see no good reason why his remarks may not as well apply to America. "I am aware that the substitution of milking and butchering races for working animals, is not always practicable. I am not finding fault with those portions of our territory where cultivation is carried on with oxen, or even cows.—I recommend no sudden and rash change. I simply confine myself to stating facts as they exist, and believe I have demonstrated that by the sole fact of the almost entire abandonment of tillage by oxen, the soil of Britain—even including Scotland and Ireland—has in cattle reached a production double that of ours.—Such in Agriculture is the power of a correct principle when practically carried out."

#### KILLING CALVES FOR VEAL.

The French, like the Americans, consider veal a respectable article of food, which is hardly the case in England. If we maintain a large number of old cattle for labor, we have so much the less keeping for other stock, and are compelled to slaughter our calves, so that we are, as it were, obliged to eat veal, whether we like it or not, to turn our calves to some account. It is estimated that in France, of four million head of cattle annually slaughtered, two millions are calves, giving only about seventy pounds each of meat. The average weight of cattle slaughtered in France is about 225 lbs., while in England it is about 550 lbs.; the calves killed in France making most of the difference. The effect of using veal for food is manifest in another way. Calves for veal are usually kept exclusively on new milk, while in England they are taken from the cow and fed upon cheaper

fare. Besides, there are only produced in England as many calves as are wanted to be raised. Every calf will grow into beef; but a farmer breeding for oxen, or for cows exclusively, must select such calves as will answer his purpose.

One third of all the milk produced in France, it is said, goes to feed calves, and there can be no doubt that milk is much more profitably applied to feed human beings than animals. The breeds of cows in France are probably not inferior in milking qualities to those of Great Britain; but the climate is perhaps not so favorable, especially in the south of France. Where the sun is powerful enough to produce wine, the temperature is too high for the most favorable production of milk. The result of the different systems, with such allowance as should be made for climate, is that the dairy products of the United Kingdom with her three millions of cows, is estimated to be double in quantity that of France with her four millions of cows. Again, the cash value of these products being in England double their value in France; it is estimated that the dairy products of the former, are worth four times that of the latter. Lavergne makes all his comparisons with reference to prices as well as amounts; but we conceive this is hardly just to his own country. Although a hundred weight of beef may be worth in the English market twice the money it is worth in the French market, it certainly does not therefore possess double value for sustaining human life. But estimating dairy products in the two countries by quantity merely, we find in France but half the amount; and this is sufficient to lead to enquiry as to the causes of this result. The slaughtering of the calves, the working of cows, the maintaining of bullocks for labor after they have ceased to grow, are all opposed to the highest system of agriculture. There is, however, a heavy item to be placed to the credit side of the system of working oxen. They perform the labour which must otherwise be performed by horses or mules kept only for the purpose; and which not only eat and drink and are waited on through life, but return no meat in payment for their food at their death. The question of the profitableness of working oxen must still remain open, though Lavergne is decided in his opposition to it.

#### PIGS AND POULTRY.

As far as can be ascertained, the same difference exists as to swine in France and England, as we find in cattle; in the latter country the animal being killed younger than in France, although at about the same weight. This is a fact that meets us every where—that in England precocity or early maturity is the great desideratum. A large animal slaughtered young, is the idea of the English farmer; and manifestly it is the true idea. If you keep a pig two years to make him weigh as much as your neighbour's pig weighs in one year, you have lost at least one

year's keeping, as a general thing. But, it is estimated that the United Kingdom produces double the quantity of pork produced in France, a result accounted for by the fact that feed of every kind abounds in Great Britain, on all the farms.

In poultry, England is a long way behind France, the dampness of her climate being unfavorable to fowls. The English poultry yards are supposed to yield about five million dollars annually, while the annual product of eggs in France is said to be twenty million dollars, and of fowls as much more. A large portion of the population at the south of France subsist chiefly upon poultry so far as meat is required.

We intend in a future number to consider French Agriculture as it relates to horses and sheep, showing the comparative profit of sheep husbandry from wool and meat.

### Japan Lilies.

TO THE EDITOR OF THE AGRICULTURIST.—I wish to know if any of your readers ever cultivated the Japan Lily. Would they do me the favor of giving me their mode and experience through the *Agriculturist*?

I have had them, but they appear to run out like the Hyacinth. The *American Agriculturist* says: leave them out all winter, and cover them with leaves or rubbish of some kind. Is this the best way? What kind of soil, and when had they better be got in—spring or fall? I do not like to dispense with so fine a flower.

R. B. WERDEN.

Picton, 30th March, 1862.

### Berberries for Hedges.

TO THE EDITOR OF THE AGRICULTURIST.—I believe the world has been ransacked far and near to find something that would answer for a hedge in this country; but as yet every thing has proved a failure. The Osage Orange is too tender, the Hawthorn dies out in places, and the Buckthorn is liable to be browsed off by cattle in the winter. But according to my observations and experience, I think the common Berberry is the very thing we so much stand in need of, it being very hardy, easy of cultivation, and so offensive that no intruder will touch it. I therefore call the attention of the Fruit Growers' Association, Nurserymen, and all others that are interested, to this important and much neglected subject—give it a trial. Would like to hear of the experience of others through the *Agriculturist*.

R. B. WERDEN.

Picton, 30th March, 1862.

## Agricultural Intelligence.

### Spring Shows.

We are informed of the following Shows to take place this Spring. We request Secretaries of Agricultural Societies to inform us of the date of their exhibitions at as early a date as possible, so as to admit of publication in time to be of use to those interested:—

West Riding of York Agricultural Society, at Weston, April 23.

Reach and Scugog, at Fpsom, April 29.

Pickering, at Duffin's Creek, April 30.

West Gwillimbury, at Bond Head, April 30.

Brant Township, County Bruce, at Walkerton, April 28.

County Peel, at Brampton, May 1.

North York, at Newmarket, April 30.

County Halton, at Milton, April 23.

Western Branch, Haldimand, at York, April 23.

County Haldimand, at Cayuga, April 24.

County of Lincoln, at Grimsby, April 22.

Hamilton Horticultural Society, 1st Show, May 24.

East Middlesex, at London, April 28.

West Middlesex, at Strathroy, April 24.

East Riding of York, and Townships of Markham, and Scarboro, May 7th.

Darlington, at Bowmanville, May 2nd.

County Kent, at Chatham, April 29th.

### Flax Culture.

MEETING AT KINGSTON.

(From the Kingston Whig.)

According to public notice a large influential meeting took place in this city at the office of the Secretary and Treasurer of the Agricultural Society of the County of Frontenac, on Saturday the 12th inst., for the purpose of devising means for the promotion of the growth of Flax. His worship, the Mayor, seeing the crowded state of the room, kindly offered the use of the Council Chamber for the meetings of the Society in future. So great was the interest manifested in the growth of this article that, although the roads were bad, there were parties from every section of the country, as well as from those counties adjoining. Henry Robinson, Esq., took the chair, when several gentlemen spoke of the utility of paying particular attention to its growth, being much more profitable than the ordinary crops cultivated in this country. William Ferguson, Esq., who has had considerable experience on this subject, dwelt largely on the adaptability of the soil in this neighborhood for its cultivation, and also urged the necessity of making early preparations for the Provincial Exhibition of 1863. His Worship the Mayor spoke



strongly in favor of the enterprise, and hoped, before long, to see it one of the staples of the country.

There were several samples shown, both dressed and undressed, of excellent quality.

His Worship the Mayor exhibited some beautiful specimens of raw silk; also a handkerchief of very fine texture, manufactured from the fibre of the Pine-apple plant, and a Mexican Lasso rope made of the fibres of the leaf of the Cactus.

Moved by his Worship the Mayor, seconded by Mr. McClean, "That the Flax Dressing Machine be placed in the Mechanics' Hall, at the Crystal Palace, for the use of these counties and others."

Moved by Dr. Barker, seconded by Mr. Gibson, "That Henry Robinson, William Ferguson and Edward Jackson, Esquires, be a Sub-Committee to take such steps as they may think advisable for the management of said Machine."

It was unanimously resolved that a Committee, composed of the following gentlemen, viz.: Dr. Barker, Wm. Ferguson, and Isaac Simpson, Esquires, be appointed to draft an address to the City and County Councils, and to be distributed through the various townships for signature, asking for aid to put the Crystal Palace Grounds and Buildings in proper order and repair for the forthcoming Exhibition in 1863.

It was requested that parties requiring Flaxseed will leave their orders with either the Secretary or G. S. Hobart (Seedsman to the Society), on or before the first of May, in order that the required quantity may be procured.

Moved by Wm. Ferguson, Esq., seconded by J. G. Strachan, Esq., "That the thanks of the Meeting be given to his Worship the Mayor for his kindness in offering the Council Chamber to the Society for its next meeting."

The meeting adjourned sine die.

ISAAC SIMPSON,

Sec'y & Treas'r C. of F. A. S.

### The Future of the Royal Farms.

It is satisfactory to learn that, hereafter and for the future to bear the name of "The Prince Consort's" Farms, they will continue under the same immediate managers to illustrate the public spirit, enterprise, and perseverance of their former Tenant: and to furnish the same examples to landlord, tenant and labourer, as when in the late Prince Consort's hands. For owners of land the examples will be still maintained which he had given of the permanent improvement and efficient equipment of estates—in all the particulars of buildings, drainage, roads, and fences. Tenant farmers will see in continued operation, year by year, both the systems of steam cultivation he had adopted; and they will witness the progress of herds of Shorthorns, Devons, and Herefords which the Prince had established

with such ability and maintained with so much perseverance. On the last occasion of his visit to the Flemish Farm he was heard explaining the great expenditure which had been incurred by him as tenant, and the need and reasonableness of it in order to the attainment of high character for the valuable herd of Herefords which has on that farm been at length established. The reasonableness of this expenditure will year by year continue to appear, as, under the same system of management which he had laid down, these farms and their respective herds shall maintain in their career the reputation he had obtained for them. It is a touching illustration of the pious care with which his agricultural reputation will be guarded, and with which the many useful agencies will be maintained which this one small section of his labours includes, that all the Prince's intentions regarding farming matters, where known, will be literally carried out, and where they can be imagined they will be carefully observed. Thus we learn that all the stock which had been intended by him for exhibition at the Battersea Great Show, will, by Her Majesty's direction, still be prepared and sent—the Royal Farms will be opened to public inspection during the summer—and fields on Colonel Hood's suggestion have been set apart, in which during the week of the great show, steam cultivation will be shown in operation on one of them. The management of the Home and Shaw Farms remaining as heretofore under the immediate superintendence of Sir C. B. Phipps, K.C.B.—that of the Norfolk and Flemish Farms under the direction of the Hon. Colonel A. N. Hood—and the management of Windsor Park remaining in the hands of Major General Seymour and the Deputy Surveyor, Mr. Menzies—there is all the guarantee which devotion to the memory of their chief, knowledge of his intentions, and personal ability and zeal can give, that the public value and utility of these farms and the public interest in them will be maintained.—*Gardener's Chronicle.*

### Consumption of Roots.

Very few farmers take the trouble of weighing the quantity of roots consumed by their feeding bullocks. On a recent trial it was ascertained that a large three-year-old ox ate as much as 300 lbs. of yellow turnips per day, and when this quantity of good swedes, or even 100 lb. less, was given to him, he disregarded entirely his more natural food—straw—although it was constantly set before him. He seemed to prefer glutting down swedes, and in cold weather he had more or less of diarrhoea afterwards. If the same animal have the roots manufactured or pulped down into very minute pieces, and if this is mixed with finely chopped straw or chaff from the thrashing-mill, and fresh, one-half of the former quantity will fill him quite as well

and feed him much better, and his loose state of bowels will trouble him no longer. After careful experiments, we find that a large s'zed ox can be fed off upon six or eight stones of pulped turnips, with the addition of a few pounds of oil-cake. Ten tons of pulped proved equal in feeding value to 15 tons given whole and sliced, so three beasts can be kept in place of two, or, in other words, 20 acres of turnips are saved upon a 400-acre farm. The best plan, in our opinion, is to have the pulping and chaffing machinery driven by power, as it is up-hill work by manual labour, on a large scale especially. We should recommend Bentall's pulper, although it may be still subject to improvement. We have tried various pulpers, and we found the Perth prize machine worst of all; it may, however, be improved like others. As to chaff-cutters, there are so many in the market that it is difficult to hazard an opinion; but we should not hesitate in taking a prize machine from any of the Royal English Shows, from the great care with which their trials of machinery are conducted. For very young cattle or beasts of any age, when thus taken from grass, the value of a pulper is most apparent, for they will then go on feeding at once; and at that season it is an excellent plan to put the swede leaves through the pulper along with the bulbs. The quantity of straw or chaff consumed varies from 10 to 20 lbs. per day; and the whole theory of the success of this process of feeding appears to us to consist in the animal swallowing a much larger quantity of saliva than when eating whole or sliced roots. Every one must have noticed the saliva running from the mouths of their cattle when chewing cold roots. The entire immunity from choking or worrying is almost a most pleasant feature connected with the system, the conducting of which, no doubt, entails something beyond the usual expense for attendance and labour; but when two men and a boy (and 2 cwt. of coals per day) can prepare and carefully attend to 100 cattle, we consider ourselves amply repaid.—*Correspondent of Scottish Farmer.*

### Death of "Windsor"

We are sorry to have to announce the death of a very celebrated character, Mr. Richard Booth's Windsor, who expired, on Thursday, the 13th. "Scour," which could not be stopped, set in, and carried him off quickly. Windsor was calved in October, 1851, and was accordingly, upwards of ten years old. His honours in the show-yard were many and well deserved. He won the first prize in the calf class at the Yorkshire Society's show at Sheffield in 1852, and the first prize at the Durham County show in the same year; the first prize as a yearling, at the Royal Agricultural Society's show at Gloucester in 1853; and the first prize at the Yorkshire Society's show at York in the same

year; the first prize as a two-year-old at the Highland Society's show at Berwick in 1854; the first prize at the Royal Irish Society's show at Armagh; and the first prize and medal and silver cup at the North Lancashire show in the same year; the first prize as an aged Bull at the Royal Agricultural Society's show at Carlisle in 1855; and the first prize at the Yorkshire Society's show at Malton in the same year. He was by Crown Prince, and his dam, Plum Blossom by Buckingham, obtained the first prize as the best cow at the Royal Society's shows at Windsor in 1851. For physical reasons, which need not be more particularly noticed here. Windsor in the earlier part of his life, had failed to be a prolific sire. Towards the close of his career, however, he became fruitful, and was certainly one of the most impressive sires that ever left the pastures of Warlabby. Though, with many others, we always thought him a trifle too narrow, he had a magnificent frame, with a fore-end that almost touched the ground, quarters long and well furnished, a back straight and firm, ribs springing out finely and roundly, unexceptionable loins, and thighs somewhat more perpendicularly shaped than those of Warlabby bulls generally are. His disposition, too, was beautiful; he was as quiet as a lamb. Very few males, either at Warlabby or elsewhere, owe their existence to this famous bull. Sir Roger "calls him father;" and Valasco, as Mr. Booth states in the herd book, was either by him or Crown Prince; it is not known which. Windsor the 2nd also, out of Satin, was his son. Mr. Carr who rented him for a year, at the large sum of 200 gs., had several bulls by him. Of these Don Windsor remains at Stackhouse; Young Windsor became the property of Mr. Bolton, of The Island, near Wexford; Imperial Windsor went in September to Mr. Foljambe's, at a rent of 120gs. a year; another, Fitz Windsor, was bought by Mr. Logan, of Maindee House, Monmouthshire; and Royal Windsor, out of Queen Charlotte, by Hamlet, belongs to Mr. Housman. These bulls, and any others by him, possess now a peculiar value.—*Bell's Messenger.*

NOVEL IMPORTATION OF STOCK.—The *Mermaid*, which arrived from Canterbury last week, had on board 38 sheep from Mr. George Rich's celebrated merino flock, consisting of 28 rams and 10 ewes. Some of them are intended for the breeding establishment of the Emperor Napoleon at Rambouillet, according to the arrangement concluded with Baron Daurier by Mr. Rich on his visit there in 1859. The remainder are for the improvement of Mr. Rich's own establishment in England. The sheep will, no doubt, obtain for Mr. Rich the recompense he merits in the full appreciation of the admirable qualities of his New Zealand-bred flock by those who are well able to form an opinion.—*Australian and New Zealand Gazette.*



### The Lonk Sheep at the Show of the Royal Agricultural Society of England at Leeds.

When at the show of the Royal Agricultural Society of England at Leeds last year, amongst the numerous lots exhibited we noticed a variety of mountain or hill sheep called Lonks, very closely resembling the Scotch black-faced, but which, upon nearer inspection, exhibited much finer proportions, and the wool a finer staple. The prizes offered by the Leeds local committee in the section for the mountain breeds for the best Lonk ram and the best pen of 5 Lonk ewes were awarded Mr. Jonathan Peel, of Knowlesmere Manor, who gives the following account of them:—

"The Lonk is an old indigenous breed inhabiting the Lancashire and Yorkshire hills, the purest blood being in the neighbourhood of Keighley, Rochdale, and also of Pendle Hill, near Clitheroe. They have long been in high esteem in their own district, and having been improved of late years, are gradually extending themselves and taking the place of mixed breeds on the neighbouring hills. The rams are now much sought after to improve these mixed breeds, the attempt being by continued crosses to work the flocks gradually towards the pure Lonk type. They are perfectly hardy, excellent mothers, and very prolific. The wool and flesh are of very superior quality. From experience I am able to say that in all these qualities they far exceed the black-faces. I lost much time in the endeavour, by crosses with Southdowns and Shropshire Downs, to strengthen their weakest points, but was unsuccessful; now, therefore, I have reverted entirely to Lonk, and have swept away every prize at the last year's shows, and sold my draft ewes at two guineas each. Few but drafts are ever to be bought, nor, of course, do they often fetch the price I got for mine. Thirty shillings would, perhaps, be about the price of good ones. I have been requested to send up fleeces to the Great Exhibition, and shall exhibit in all the 'mountain sheep' classes at Battersea."

Since the great show at Leeds, we have been anxious to find out something concerning this very thrifty and seemingly hardy breed of sheep, and, under correction of our English friends who may be better able to throw light on the subject, we are in some degree impressed with the idea that though the foundation has been laid on the original indigenous breed bred on the Lancashire and Yorkshire hills and the hill country stretching away to the borders of Scotland, they have been with consummate judgment crossed with some other breed, which, while retaining the original handsome and characteristic markings of the old race, conferred a greater roundity of form and greater aptitude to fatten. We are somewhat fortified in this opinion by Luccock; who says, in remarking on the Lanca-

shire sheep, "Some flocks are kept on the mountains, in a very poor and neglected condition, and others are found on the low and fertile plains of the west; but the stock of sheep is small and ill attended, and the wool is very dirty and coarse and kempy, and the greater part possesses all the bad properties of the neglected mountain sheep." Youatt says, "This is very severe criticism, and doubtless is perfectly true at the time. More attention is now paid to sheep husbandry, but not so much as it deserves."

"The prevailing breed is what is called here the Woodland horned sheep—a variety of the heath or mountain sheep, which, beginning to appear on the hilly country, are spread over the whole north, to the very extreme of Scotland. They are found pure, or with almost every variety of cross; but the principal crosses, and which are decided improvements, are the Leicester or the Southdown, and by means of which both the carcase and the wool are increased in weight and value." Again, "The two ranges of hills, the Western and Eastern Moorlands occupy the greater portion of it (North Riding of Yorkshire). They are cold and desolate, and covered with heath; but the valleys by which they are intersected contain much good soil, and are well cultivated. The sheep that are found on them live on the open heaths all the year round. Their summer food at least, and often their winter food too, consists of heath and rushes, and a few of the coarsest grasses. The long-woolled sheep could not live there, and their owners have wisely refrained from contesting the possession of these hills. The moorland sheep are horned, and have black or mottled faces or legs. Their horns spread wide. Mr. Marshall says that the covering of their buttocks is mere hair, resembling the shag of the goat more than the wool of a sheep; but this is considered a mark of hardness. They are small, being not much larger than the heath sheep of Norfolk. Ewes weigh from 7 to 10 pounds per quarter, and the wethers from 10 to 14 pounds. Mr. Marshall was a good judge of sheep, and there can be no doubt that the description was accurate at the time when he wrote; but the farmers have become better informed and the sheep have materially improved." — *Irish Farmer's Gazette*.

### Evil Effects of Pampering Cattle.

We learn from recent English papers that Mr. Booth's celebrated short horn cow, *Queen Mab*, which obtained either first or second prizes at the National shows both of England and Scotland, has proved, in consequence of too high feeding, incapable of breeding. We saw this animal at the English Society's Show at Canterbury, in 1860, when doubts were gravely expres-

sed by competent judges on this point. Captain Gunter's Shorthorn cow, which won the first prize at the Royal at Leeds last year, is also disqualified, from the same cause. The splendid Bull *Statesman*, which we saw at the Royal Irish Show at Cork in 1860, has proved himself impotent as a stock-getter from the stimulating system to which he has been subjected. It is true these are but isolated instances, but it will be well for short horn men to be alive to them, or the fair fame of that distinguished breed will, by degrees, become tarnished. On this side of the Atlantic, Durham cows especially, may be occasionally seen at exhibitions in much too high a condit on for safe breeding purposes. This is owing more to the absurd manner in which these animals have been treated, than to any innate defects of their own. "It is," remarks the *Mark Lane Express*, "the suicidal forcing system, which we have so long protested against, that is destroying the fair fame of the Shorthorns. The real value of a brood mare or a brood cow centres in her ability to breed, and the Royal Agricultural Society will yet have to face this abuse with more determination."

## Horticultural.

### Flower Beds and Bedding Plants.

*Read before the Hamilton Horticultural Club by Mr. Geo. Laing, Gardener, of that City.*

MR. PRESIDENT AND GENTLEMEN:—The winter that is now, we trust, nearly past, although long, has been favourable in many respects, particularly so, for horticultural in-door operations, the keeping of plants, &c. Such being the case it is to be hoped that all will be well supplied with plenty of good things for the coming season, so that the pleasure grounds, gardens, and flower beds, will be better and look gayer than they ever yet have done. Adverse as the times have been of late, Horticulture has continued to advance. This is encouraging and ought to stimulate all to push onwards in the good work—there is still much to do.

In my paper on flower beds and bedding plants last year, I noticed in a general way most of the kinds in use; their culture and management, and as I have been called on for another paper this year, on the same subject, it is not necessary for me now to touch much on any of the particulars I then noticed. In looking over the report of that paper in the *Canadian Agriculturist* of 1st of May last, I find that no notice was there taken of the bulbous flowering plants, a class that is very full of interest and very worthy of cultivation. Mr. Bruce in his paper to this club last month, so fully described this class, their nature, habits and culture, as to render any thing from me here unnecessary, further than to remark that

they are very requisite in all places for early flowering. In passing over the bulbs the *Anemone* and *Ranunculus* have occurred to my mind as worthy things, they are very much appreciated in the Old Country for their beauty and early flowering, but here they seem to be little noticed. I believe this in some measure may be attributed to a fear of our long and hard winters, and the failures of a few that have tried them. I am inclined to think they will do well if properly planted in fall in a good sandy loam, before the frost sets in, covering the beds over with a good layer of light stable manure or tree leaves, or a mixture of both, laying boards on the top to turn off the rains, otherwise early in the spring put them into small pots, start them either in a frame or pit with a slight heat, when a little advanced and weather permitting plant them out into a suitable situation.

This season I hope that a greater effort will be made with the shrubby *Calceolarias* as a bedding plant. It appears to me strange, when they do so very well in the green houses that they won't do outside; it is said that our climate is too hot for them, if so put them in a shade. There are now many excellent new varieties; all very much praised in England for their bedding qualities, their hardiness, profusion of colours, rich and continued flowering habits, properties that I think ought to encourage their cultivation in this country. In the ribbon border system, which I shall here introduce, the *Calceolaria* is almost indispensable.

Ribbon borders, pannelled beds and linked chains, &c.—strange things to be made of flower plants, but such is the case, and very beautiful they are. In the Old Country for some years, this has been the leading feature in floriculture, over the length and breadth of the land. Novel as it may appear it is no less true, and worthy of commendation. Much has been and is being made of it where it has been and is practised. Very greatly has it been praised, but for all, and in all, it is nothing more or less than arrangement of colours, foliage shades, and regularly proportionated growing plants. Simple as it may appear it requires both taste and judgment to execute it properly. The principle is good and will answer well in any place, whether large or small, no doubt the more extensive and diversified the grounds and gardens are the better will be the effects. In this as in all other modes of planting, the effects depend much on the nature and formation of the grounds, but this is not now under consideration. My present object is, simply to convey a few ideas that may prove beneficial to those of our energetic gardeners and amateurs who have made up their minds to become ribbon men for this year.

First then, each and all individually will say to himself before he begins, in what manner shall I plant these grounds, gardens, &c., to have the most pleasing and expressive effects, and to produce the best and most continuous



show of flowers during the season? He thinks: the nature of the grounds, borders and beds, are all familiar to me, the attractive sights from the mansion house, drawing room windows, conservatory, and all other conspicuous points I know, in all their bearings. He then considers, his mind gets absorbed on colours, lights and shades, and all that is beautiful, by and by in ecstasy he exclaims, I see it all prospectively! and then to obtain it in reality he commences his arrangements nothing down something such as the following: The large border leading towards the garden, I shall ribbon with some of my geraniums, such as *Brilliant*s, *Tom Thumb*, and *Flower of the day*, with other fine things, here my *calceolarias* will come in first-rate, with *Alyssum* variegated as outer edging if I can get it. The borders on each side the main walk from the mansion house I shall also ribbon, with some of my *Heliotropiums* and fine hardy dwarf *Lantanas*, and the choicest of my *verbenas*, with *cerastium tomentosum* on the one side and blue *lobelias* on the other. The beds in front of the mansion house, I shall panel, this will be in nice keeping with the house. This panelling is rather a ticklish piece of work, but I shall manage it, my ground work I shall carefully frame, raising all my centres, have no sunk panels, bearing always in mind that each member of the order properly distinguish itself. With this view, for my framing purposes I shall use plants of a close texture, dark green foliage with bright flowers of very distinct colours, the panels of lighter shades, close and procumbent plants with flowers distinctly different from the frames. The small narrow stripes on each side the serpentine walk leading to the summer house to be lined with all the finest dwarf and choicest flowering things that I can lay hold of. The figures in the distance I shall group with my largest plants.

In the manner described, the whole being noted, all enumerated and duly considered, when the planting comes on the operator is enabled to proceed systematically and in order. It is not for me here to particularize, name plants or recommend colours for this purpose. every ribboner and paneller must choose for himself. Our lady friends can aid much in the furtherance of this object being all good judges of colours and ribbons. Most of the gardeners and many of the amateurs here are well stocked in *verbenas*, *heliotropes*, *petunias*, &c., and of the older kinds of bedding geraniums, but few have yet obtained many of the new varieties, such as *Mrs. Pollock*, a fine scarlet, one of the best geraniums out, and good for all purposes. *Burning Bush*, valuable either for the flower garden, green house or conservatory, its peculiar leaf tint when grown as a pot plant gives a charming effect under glass. *Golden Tom Thumb* is here in all his glory, with his fine golden broad margins increasing in beauty with the growth of the plant, showing a bright green disc, dark zone, and a mass of bright scarlet flowers. Perfection, of

dwarf spreading habits with pure white margin, bright scarlet trusses, good either for ribbon lines or groups. *Golden Harkaway*, with its beautiful golden foliage and fine flowers, is a first-rater for vases, small beds or margins. *Alma*, with green disc and noble scarlet trusses. *Golden Chain*, with golden margin finely contrasted with a bright green disc and dark zone, producing an abundance of large trusses of dark shaded cerise blossom. Attraction, a fine variety with white margin fine rose zone or inner belt, green disc with pink trusses. Many more of the variegated and other new varieties might be mentioned, a few of which would be a very great acquisition to our bedding stocks.

*Gazania Splendens* is now plentiful, it makes a very nice bed and answers well in vases. Try and have the pansies in right compost this year and their beds in a shaded place. Mr. Dean says, in the *Florist and Pomologist*, published in London, February last, "that our favourite flower runs a great risk of finding a powerful rival, in the new and fancy forms recently introduced under the designation of fancy or Belgian pansy," he says, "that they are fast approaching the circular form combined with substance, which the stern laws of the florist demand before they can be admitted into their circle, wonderful things are doing now a days amongst the flowers by cross-breeding."

This same kind of fancy pansies is to be seen in Bruce and Murray's Nursery in this city; they are rather thin in substance, but well formed and pretty.

I may again let you have more on the bedding subject.

### Deep Planting of Trees.

Most writers on fruit culture are agreed on the injury resulting from deep planting. Whether in noting the assertion, they all have clear and well defined ideas of what deep planting really is, is not so apparent. I rather suspect that the term is frequently employed by many who could not tell you whether a certain depth was too deep or the reverse. In fact it is one of those very indefinite and vague terms that get into print and are used "promiscuously." Now, I here put it to those who may hereafter use the term "deep planting," to state positively what it means in connection with their subject. It is frequently given as an illustration, that when a seed, an acorn for instance, drops on the ground and vegetates, the roots and stem of the future tree will be properly situated as regards depth of planting. Notwithstanding that this and similar statements are constantly being made, we never see the gardeners sowing their peas or any other seeds on the surface. On the contrary, all advices recommend covering more or less in depth with the soil, and very properly too, as all who ever attempted raising plants from seeds are fully aware.

The necessity of keeping the roots of plants within the influence of the atmosphere, is one of the most important truths in culture, but it does not follow that they should be kept on the surface of the soil. The impracticability of maintaining roots in a healthy condition, and in a medium where they can perform their offices, on the mere surface, must be well understood by all cultivators. Frequently in dry summers the soil is entirely destitute of moisture for a depth of twelve or more inches, and even if possible for a tree to survive the summer, the injury from freezing in winter would act very fatally. It may be said that mulching the ground with six inches of manure, charcoal, or some other non-conducting matter will obviate this difficulty, but where is the soil that will preserve a porosity after a series of heavy rains in summer, or the consolidating tendency of heavy winter snows. All experienced cultivators are convinced of the propriety and absolute necessity of keeping a loose, free surface soil, and the thorough beneficial effects of the harrowing and surface stirring; these effects are too apparent to be gainsayed, and this stratum of stirred soil must be above the roots. Indeed there is no better protection against the drying out of root moisture than six inches of well pulverized soil, leaving out of the question the undoubted benefit gained by the amount of plant food liberated by exposing all portions of soil to the decomposing influences of the atmosphere.

On wet clayey soils, where draining should be, but has not been executed, and where trees are desired, it is a practice indited by common sense as well as by physiological reasoning, to plant shallow. By planting shallow it is not meant that the roots are to be superficially and imperfectly covered, but that instead of digging a hole in the ground, the tree is set on the surface and soil brought to it, covering it with five or six inches all over the roots. On dry and well drained soils, the plants are set in the soil, so that the roots are sufficiently covered, but yet it is not to be understood the latter are deep planted. No, both are properly planted according to the circumstances prevailing in each case.

Other circumstances besides the above will occasionally influence the depth of planting. Dwarf apple and pear trees grafted on the Paradise and Quince stocks, have to be so planted that the stocks are thoroughly covered with soil, so that they may be put out of the reach of the borer. These trees are grafted so that this practice can be adopted. The necessity of proper grafting in this case has been well shown by Mr. Mead, the present Editor of the *Horticulturist*, who was induced to purchase dwarf pears grafted on stocks twenty inches high, and in order to plant them according to rule, had to insert them nearly two feet in the ground to ensure the covering of the junction. This was a very definite case of *deep planting*, and as the

trees mostly all died, it left not a doubt as to the impropriety of the practice. But then it does not follow that we should stretch to the opposite extreme and plant so shallow as not to properly cover the roots. My own practice has been much modified as observation and experience enables me to judge that that roots of trees cannot long be kept without injury on the immediate surface of the soil.—W. S. G.—*Country Gentlemen*.

## The Dairy.

### Butter and Cheese.

We have been deeply interested with Miss Martineau's charming little work, recently published, entitled "Health, Husbandry, and Handicraft," which contains a selection of her papers, contributed during the past few years to the pages of "Household Words," "Chambers's Journal," and "Once a Week." Most agricultural topics are discussed, such as pigs and poultry, drought and drainage, butter and cheese, and dairy management generally. In the volume before us the need of butter as food is illustrated from the habits and economy of nations, under every latitude on the surface of the earth; but the butter-making described is chiefly that of Ireland, while the cheese-making is chiefly that of Cheshire.

The butter and cheese making to which, in this article, we would refer, are those which are carried on together in many of the large English dairies, where a portion of the cream is taken from the milk, lest the cheese made from whole milk should heave in curing. This is the practice in most Gloucestershire dairies. A dairy of 100 cows will yield probably  $1\frac{1}{2}$  cwt. of butter weekly in the height of the season; the skim milk of a small portion set apart being added to the whole milk morning and evening, before it is set for curd.

The difficulty of making a cheese of whole milk, which shall not heave, is overcome in Cheddar cheese-making:—and the characteristic feature seems to be the scalding of the curd, after it has been broken, at a much higher temperature than is allowed in other dairies. A Cheddar cheese is worth 80s. a cwt.; a cwt. of good Gloucestershire may fetch 65s.; the difference between the two is not, however, clear profit to Cheddar dairymen. For the Gloucestershire



ter dairy yields a pound or a pound and a half of butter per cow weekly, in addition to ner cheese, while the produce of the Cheddar dairy is wholly cheese, or cheese and bacon.

As the dairy business is yearly becoming of more importance to Canadian farmers, the following short account of their principal methods of making cheese in England, condensed from Miss Martineau's book, will not be uninteresting to our readers:—

1. **GLOUCESTER CHEESE.**—Under ordinary management, the Gloucester cheese is made twice a day. The morning's milk is heated or cooled to about 80° in one or more large vessels of from 80 to 100 gallons; a pint and a half or thereabouts of rennet is added to every 100 gallons; in an hour's time or so, when the curd has set, the curd-breaker, a wire sieve fixed on the end of a pole, is slowly and repeatedly drawn hither and thither through the mass, the whey is baled out, the curd is pressed by the hand, crumbled fine, and placed in a cloth and in the cheese vat under a press for twelve hours; it is then salted and turned, and again put under the press. It is kept there as long as there is pressure for it, and afterwards transferred to the dairy shelves, where it is turned at intervals, and where it gradually ripens. The whey baled out of the curd-tub stands and throws up a cream from which an inferior butter is made. In addition to the cheese, some 4 cwt. a-piece made per cow, and the 36 lbs., or thereabouts, of milk and whey butter made per annum, they calculate in Gloucestershire on fattening a pig of about 12 stone for every three cows upon the waste whey, &c., of the dairy.

2. **CHESHIRE CHEESE.**—The following may be taken as the ordinary history of a Cheshire cheese:—The cows are milked at night, and the milk poured through a sieve into tin pans on the floor of the milk-house. This milk is skimmed in the morning, and then poured into the large tub where the curd is "set." As the morning's milking proceeds, the pailful are brought one after another and poured through the sieve into this tub. A pan of milk is warmed by floating in a boiler in the dairy, and when sufficiently hot the whole of the cream just taken is mixed with it, and the whole thus warmed is poured at last into the tub, which thus contains the whole milk, cream and all, of both "meals." The temperature of the milk, when well mixed, should be about 75 degrees Fah. The liquid colouring matter, "annatto," about half a gill, or half an ounce of the solid colouring matter dissolved in half a pint of warm water, is added to the 100 or 120 gallons which may be then in in the tub as the produce of 40 cows; and the rennet, about a pint of brine, in which two or three little bits of the prepared calves' vells have been steeped over night, is added to the milk, which is then left for an hour covered up till the curd has fully formed. It is then cut slowly with a wire curd-breaker, and the curd

sinking, the whey is baled out; the curd is collected and squeezed both by hand and the direct pressure of a weight above a board placed upon it, and the last of the whey being removed, it is lifted either into a basket or into one of the large Cheshire cheese vats ("thrusting tubs,") pierced with holes for the further escape of fluid—the lower part being a wooden cylindrical vat, and the upper a tin cylinder slipping into it as the curd on pressure sinks. After a certain pressure in this form, the curd is removed, and cut and broken by hand or by a curd mill, and from one to two pounds of fine salt is scattered over it, according to the weight of the cheese; about 1 lb. to every 40 lbs. of cheese is a common quantity. The whole curd being then re-broken is refilled into the vat, into which a cheese cloth has previously been placed. It is then put gradually under pressure, which, after the second or third day, amounts to nearly a ton weight upon each cheese. Every day the cheese is turned and wrapped in fresh cloths, and on the 7th or 8th day of this treatment, or as soon as dry, it is removed to the loft, and there swathed around with a linen band and placed on a bench, being turned occasionally until it is ready for sale. The Cheshire cheese is thus a whole milk cheese.

3. **THE CHEDDAR CHEESE** is also a whole milk cheese. It differs in its manufacture from the others chiefly in the scalding of the curd. Immediately after the morning milking, the evening and morning milk are put together into the tub. The temperature of the whole is brought to 80 degrees by heating a small quantity of the evening milk. A small quantity of annatto is put into the milk along with the rennet, and in an hour, the curd having set, is partially broken, and a small quantity of whey is then drawn off to be heated. The curd is then minutely broken, and as much of the heated whey is mixed with it as suffices to raise it to 80 degrees, the temperature at which the rennet was added. In another hour, a few pailfuls of whey are drawn off, and heated to a higher temperature than at eight o'clock. The curd is then broken as minutely as before, and after this is carefully done, an assistant pours several pailfuls of the heated whey into the mass. During the pouring in of the whey the stirring with the breakers is actively continued, in order to mix the whole regularly, and not to allow any portion of the curd to become over-heated. The temperature is thus raised to 100 degrees, and the stirring is continued a considerable time, until the minutely broken pieces of curd acquire a certain degree of consistency; the curd is then left half an hour to subside. Drawing off the whey is the next operation, and the curd is carefully heaped up, and left for an hour with no other pressure than its own weight. The whey drips towards the side of the tub, and runs off at the spigot, no pressure being applied. The curd is cooled to 60 degrees, and put into the vat under pres-

sure for half an hour; at this time the curd is broken a little by the hand, and thrown upon a lead cooler, until it is brought down to the desired temperature. The after management of the cheese resembles that of the Cheshire. A little salt,  $1\frac{1}{2}$  lbs. per cwt., or thereabouts, is added to the crumbled curd, and it is mingled and broken by the curd mill.

The striking circumstance connected with all these methods of making cheese is that neither in the curd, nor the butter, if any, one in the bacon made by the consumption of the whey are all the contents of the milk, according to the analysis of the chemist, returned to the farmer. Mr. Harrison, of Frocester Court, Gloucestershire, has thus called attention to this important fact:—"The quantity of bacon fatted from the whey shows that there must be an immense quantity of valuable food left in it. But even allowing the whey to be worth £2 per cow, this is not half of what its contents would be worth could they be extracted and prepared in the form of cheese and butter for human food. There is here a broad margin for experimental inquiry and improvement. On this point I have worked out the following from the records of our dairy. I take a single year, when the yield of milk was 31,700 gallons, weighing 321,000 lbs., and containing therein, by analysis, 12,480 lbs. of casein, and 11,556 lbs. of butter; now the dairy produce was of cheese 25,424 lbs., and of butter 3466 lbs.; and these contained, by analysis, 9765 lbs. of casein, and 8,366 lbs. of butter; leaving 2715 lbs. of casein, or 22 per cent., and 3190 lbs. of butter, or 27·6 per cent. unaccounted for.

"Such a calculation is of course only approximate. For instance, instead of taking the double Gloucester analysis for the cheese that was made, it would have been more correct to take the Cheddar analysis, as we endeavoured to make the cheese much richer than in the former years. This would reduce considerably the large apparent loss of butter.

"The chief point is to see clearly that there is an enormous quantity of casein and butter which we do not extract from the milk. Can no means be devised for extracting them more thoroughly? I have no doubt the application of heat on the Cheddar system will do much, but a maker of this cheese was astonished to see the quantity of curd that resulted from boiling a small quantity of his clear-looking whey. I believe that the loss results from the system of minutely dividing the curd after it is set, and that it comprises some of the richest of the casein and butter. It is well known how much a successful result depends upon the gentleness with which this operation is performed."

The enormous loss which analysis indicates in the case of Mr. Harrison's dairy is probably, as he says, beyond the truth; but the truth itself must be bad enough; and the subject is one which much needs investigation by the agricul-

tural chemist. It is satisfactory, therefore, to learn that Dr. Voelcker, the chemist of the Agricultural Society of England, has been for some months engaged upon it. He gave the main results of his research in a recent lecture in Hanover square, and we look with great interest to its appearance in the next number of the Society's Journal.

## Veterinary.

### Epidemic among Dairy Stock in Britain

(From the *Mark Lane Express*, Feb. 23rd.)

The new number of *The Veterinarian*, for February that is, has the following amongst other FACTS AND OBSERVATIONS of the month:—"During the past few weeks *Eczema Epizootica* has prevailed to a very serious extent in the dairies of the metropolis and the surrounding districts. Many cows have died, and a far greater number have been disposed of at a great reduction of price, in consequence of becoming affected with mammitis, ulceration of the feet, &c., as sequelæ of the malady. The purveyors of milk have been put to the greatest strait to find a sufficiently supply for their daily customers, and healthy cows from the country have been purchased by them at fully twenty per cent. above their ordinary value."

Significantly enough Mr. John Gamgee, the Principal of the New Veterinary College in Edinburgh, has just taken up the same subject. On only Wednesday last he delivered a public lecture in Edinburgh on the present traffic in unwholesome meat and milk, a full report of which is given in the *Edinburgh Veterinary Review* for this month. The Northern Professor is able personally to corroborate the alarming character of the cattle disease as it is now raging in the dairies of the metropolis: "I have recently visited London, where the complaints amongst the cow-keepers are terrible. Few I am told, are paying their way; some may be thriving, but entirely by the system of selling diseased cows to the butchers, or by keeping very few cows, and 'drawing in' their milk. By this is meant purchasing from the dealers who receive largely from the country. I spoke to one of these dealers; and disease existed amongst the cows to such an extent, that he said, although nothing can be more profitable than cow-keeping if the cows retain their health, we now lose seriously, and keep up our trade by buying from all sources. Constantly, throughout London, have the lung and apthous diseases existed for many years past; they prevail largely now, and about a month ago, epizootic aphthæ broke out; it has spread north, and is at the present time in Edinburgh."

It is satisfactory to see the Profession alive to the evil now so alarmingly on the increase; but



while *The Veterinarian* is content, at least for the present, with a simple record of the fact, Mr. Gamgee goes elaborately into the subject as a public question. It is not merely a critical time for dairymen, butchers, or cattle dealers; for the vital interests of the community are equally at stake. With the spread of the disease we shall have a proportionate extension of the trade in diseased meat and milk. The sale of unwholesome beef and mutton has often ere now been dwelt upon, and by no one with more weight than Mr. Gamgee himself. "Within a comparatively recent period" let us here see what "the so-called murrain" has done amongst the dairies:—"The eruption occurs in the mouth, on the teats, and on the feet. If calves are permitted to suckle cows, or if pigs drink the warm milk, they are seized with violent irritation of the throat and alimentary canal, and die." It would not be to the dairyman's profit to attempt to consume such poisoned produce on his own premises; while as we fear is but only too probable, should he dispose of it in the usual manner to the public, it may be with such consequences as these:—"Many instances, but especially experiments by Jacob and by Professor Hertwig of Berlin, have shown that an eruptive fever develops in man after drinking such milk. If infants, who should have an abundant supply of this nutritious product, receive it thus poisoned, what must be the result? Admitting that it may be very rare that a child has been killed from such a cause, we certainly cannot countenance any practice likely to inflict the slightest pain or injury on tender babies."

Surely here is matter for some very serious alarm, and calling for some as immediate investigation. The disease in the dairy is spreading. Can we say from any known cause? Simply, then, because the most certain means are adopted, not for prevention, but contagion. When a dairyman finds a cow affected he feeds her up, and sends her into the open market, where she stands amidst herds of others, amongst which the healthy, fresh, country cattle are the most susceptible subjects. The very obvious commentary on such a course is that it should be at once prevented by due inspection and careful attention, so that no suspected animal should be suffered to mix with others until properly passed—or, briefly, either killed or cured. How answers Mr. Gamgee to this? "The inspectors to be found in our large towns, and who have been fleshers (butchers), weavers, servants, policemen, &c., are unfit for such duties, which professional men can alone accomplish. To accuse such men that they do not do their duty because they do not check the traffic in diseased animals, is equal to accusing a man of a crime because he won't jump over the moon. I unhesitatingly say, what I have repeated a thousand times over, that the whole system of inspection is a farce." As regards any remedy, the lecturer spoke out quite as strongly against

the members of his own profession. We are by no means anxious to pit one "school" against another; but when, with the disorder raging as it is now admitted to be in London, we are told what our London authorities are, or rather are not doing, becomes us to ascertain how far the charge is warranted. If neglect is thinning our dairies and poisoning our people, amendment is at least to some extent in our own hands. Mr. Gamgee indignantly asks: "Is it not monstrous that with diseases so dangerous and so rife in our land, there is no infirmary in the whole length and breadth of her Majesty's dominions where half-a-dozen diseased cattle are ever seen—a stray case occasionally? I believe I saw three diseased cattle in three years that I was at the London Veterinary College, and so eager was I for practical instruction, that I hunted the dairies myself to see, to treat, and of course to kill perhaps oftener than I could cure. What would the public and our medical men say if medical schools had no hospitals? A scanty variety of patients, chiefly a few lame horses, are not likely to teach our students how to benefit the farmer; and, as the Principal of one of our Veterinary Colleges, I attack the system which condemns the public to eat diseased cattle, whilst no effort is made to teach men how to control or prevent disease."

### How to Choose a Farm Horse.

John Brunson, in a late issue of the *Ohio Cultivator*, lays down the following rules to be observed in the choice of a horse for the purposes of the farm:

"The farmer requires a horse that can take him to market and around his farm, on which he can occasionally ride for pleasure, and which he must sometimes use for the plow and harrow. First to notice are the eyes, which should be well examined. Clearness of the eye is a sure indication of goodness. But this is not all—the eyelids eyebrows, and all other appendages, must be considered; for many horses whose eyes appear clear and brilliant, go blind at an early age; therefore, be careful to observe whether the part between the eyelids and eyebrows is swollen, for this indicates that the eye will not last. When the eyes are remarkably flat, sunk within their orbits, it is a bad sign. The iris or circle that surrounds the sight of the eye, should be distinct, and of a pale, variegated cinnamon color; for this is a sure sign of a good eye. The eyes of a horse are never too large. The head should be of good size, broad between the eyes, large nostrils, red within, for large nostrils betoken good wind. The feet and legs should be regarded; for a horse with bad feet, like a house with a weak foundation, will do little service. The feet should be of middle size and smooth; the heels should be firm, and not spongy and rotten. The limbs should be free from blemish.

es of all kinds, the knees straight, and back sinews strong and well braced. The pastern joints should be clean and clear of swellings of all kinds, and come near the ground; for such never have the ring-bone. Fleahy-legged horses are generally subject to the grease and other infirmities of that kind, and therefore should not be chosen. The body should be of good size, the back straight, or nearly so, and have only a small sinking below the withers; the barrel round, and the ribs coming close to the hip joints. The shoulders should run back, but not too heavy; for a horse with heavy shoulders seldom moves well. Chest and arms large. A horse weighing from 1,300 to 1,400 pounds is large enough for a cart horse; from 1,000 to 1,200 is large enough for a farmer's horse; from 1,000 to 1,100 is heavy enough for a carriage horse. I should advise every one to get some experimental knowledge of a horse before purchasing."

### Miscellaneous.

**STRENGTH OF THE TIGER.**—The strength of the tiger is prodigious. By a single cuff of his great fore paw he will break the skull of an ox as easily as you or I could smash a gooseberry, and then, taking his prey by the neck, will straighten his muscles and march off at a half trot with only the hoofs and tail of the defunct animal trailing the ground. An eminent traveller relates that a buffalo belonging to a peasant in India having got helplessly fixed in a swamp, its owner went to seek assistance of his neighbours to drag it out. While he was gone, however, a tiger visited the spot and unceremoniously slew and drew the buffalo out of the mire, and had just got it comfortably over his shoulders preparatory to trotting home, when the herdsman and his friends approached. The buffalo, which weighed more than a thousand pounds had its skull fractured, and its body nearly emptied of blood.—*Wild Sports of the World.*

**MODE OF LIVING IN ICELAND.**—The walls of the room are still of the colour of the wood, but it is easy to see that they are new. Within a year, the peasant remarks, they will be handsomely painted. In the backgrounds our searching glance detects a small alcove; and a clean bed is visible between the half-drawn chintz curtains. The space between the windows is occupied by a table and several easy chairs.—Against the walls, to right and left stand the newly polished commode, and a species of secretaire in oak. The conversation between ourself and the peasant certainly progresses but poorly as we both maltreated Danish; but, ere long, his daughter appears, an underset girl with bright red plump cheeks, and the stumpy nose peculiar to the daughters of the land. She is busy in preparing the meal. The tablecloth is of snow

white linen, the service of the finest china, and the spoons of heavy silver. Soon a tureen of rice-soup steams on the table. The following dishes are magnificent: Trout with their yellowish-red meat, smoked mutton, eggs, supplied by the ducks dwelling on the adjoining lakes some of the well-tasted national fish *skyr*; and as the finale, coffee. A gourmet might possibly have some fault to find with the cookery, but the hungry traveller is not dainty. When, besides these enjoyments, he has the certainty that a bed of down is awaiting him, such as can only be met with in princely palaces, he has everything combined to make him comfortable.—*Winkler's Iceland.*

**USE OF FAT.**—"What is the use of fat?" It performs several offices; one is to round the system and complete the beauty of the person. Your cousin Jane's smooth neck owes its beauty to the skilful manner in which the adipose matter is packed into all the crevices between the muscles, veins and arteries. For nature expends no small amount of labor in the production of beauty. "Behold the lilies of the field; not Solomon in all his glory was arrayed like one of these!" Another use of the adipose matter is to serve as a reservoir of aliment for the support of the system. In the fever which I recently had my stomach was in such a state that it could digest no food, and by one of those beautiful adjustments so common in nature, my appetite rejected it, and I did not eat a mouthful for several days. The consequence was that the heat of the body had to be kept up by burning the fat in the system, and how rapidly this was consumed! I suppose I lost twenty pounds in the course of three days. Hibernating animals, that sleep through the winter, are generally as fat as they can be, when they crawl into their nests in the fall. Their thick furs prevent the radiation of heat, so that little is required to be generated; their breathing and circulation are sluggish, causing a slow consumption of matter, and this matter is supplied by a store of fat in the system, which is slowly burned up during the winter, and the animals come out in the spring as lank as Pharaoh's lean kine. If you put a piece of fat on the fire you will see that it burns with a blaze. Whenever any organic substance burns with a blaze you may be almost sure that it contains hydrogen. The burning of a substance is simply its combination of oxygen. Whenever an organic substance containing hydrogen is sufficiently heated, it is decomposed, and, as the hydrogen is separated from the other elements, it takes the gaseous form. Rising in this hot state, as it comes in contact with the oxygen in the air, it combines with it—in other words, burns; one atom of oxygen combining with one atom of hydrogen, and producing water. There is phosphorus in the bones, which, when separated, will burn with a flame, but, almost invariably, when you see any animal or vegetable



substance burning with a blaze—the flame of a lamp, of a kitchen fire, of a burning building—it is hydrogen in the act of combining with oxygen, producing water. On the other hand, when you see any organic substance burning with a red heat without blaze like charcoal or anthracite coal, it is carbon combining with oxygen, and producing generally, carbonic acid. If the blaze produces a good deal of light, you may be pretty sure that the substance contains both carbon and hydrogen, the light coming principally from the intensely-heated carbon before it is burned.—*New England Farmer.*

**A SARDINIAN FARMHOUSE**—In this court are implements of husbandry, antique enough to tax the ingenuity of Jonathan Oldbuck himself as to their real origin; and in a snug corner are neat rows of cork-pails, there placed in pleasing anticipation of the coming milking time. There is a tremendous baying and rushing forth of enormous boar-hounds, silenced with difficulty by an equally tremendous “Ai ha!” and “Zitto!” from the farmer, where at the noble creatures wag their tails and crouch their several resting-places. And this farmer, with his short kilt of black homespun, wide white cotton drawers and sleeves—so snowy white, too—and loose sheepskin, sleeveless coat, with the shaggy wool outside, neatly-gartered legs, long black beard, and knife-garnished belt—certainly he does not look much like a peaceful tiller of land and tender of flocks; he (to my mind at least) much more resembles a “Capo banditti.” Nevertheless poor Renzo is peaceful and harmless enough, and we may as well follow him into his cheerful and hospitable “stazzu.” The first room is, as usual, the general apartment. The hugh smoking smouldering log occupies the centre; in one corner, neatly rolled up, are the sleeping mats, which at night will be unfurled and placed in a circle round the log, to serve as couches for the younger members of the family; the luxury of beds being reserved for married couples or occasional guests.—*National Magazine.*

**THE SNOW.**—The snow was proverbially called the “poor farmer’s manure” before scientific analysis had shown that it contained a larger per centage of ammonia than rain. The snow serves as a protecting mantle to the tender herbage and the roots of all plants against the fierce blasts and cold of winter. An examination of snow in Siberia showed that when the temperature of the air was seventy-two degrees below zero, the temperature of the snow a little below the surface was twenty nine degrees above zero, over one hundred degrees difference. The snow keeps the earth just below its surface in a condition to take on chemical changes which would not happen if the earth was bare and frozen to a great depth. The snow prevents exhalations from the earth, and is a powerful absorbent, retaining and returning to the earth gases arising from vegetable and animal decomposition. The snow,

though it falls heavily at the door of the poor, and brings death and starvation to the fowls of the air and beasts of the field, is yet of incalculable benefit in a climate like ours, and especially at this time when the deep springs of the earth were failing and the mill streams were refusing their motive powers to the craving appetites of man. If, during the last month, the clouds had dropped rain instead of snow, we might have bored the earth in vain for water; but, with a foot of snow upon the earth and many feet upon the mountains, the hum of the mill-stones and the harsh notes of the saw will soon and long testify to its beneficence. Bridges, earth-works, and the fruits of engineering skill and toil may be swept away, but men will rejoice in the general good and adore the benevolence of Him who orders all things aright. The snow is a great purifier of the atmosphere. The absorbent power of capillary action of snow is like that of a sponge or charcoal. Immediately after the snow has fallen, melt it in a clean vessel and taste it, and you will find immediately evidences of its impurity. Try some a day or two old, and it becomes nauseous, especially in cities. Snow water makes the mouth harsh and dry. It has the same effect upon the skin, and upon the hands and feet produces the painful malady of chilblains. The following easy experiment illustrates beautifully the absorbent property of snow: Take a lump of snow (a piece of snow crust answers well) of three or four inches in length, and hold in the flame of a lamp; not a drop of water will fall from the snow, but the water, as fast as formed, will penetrate or be drawn up into the mass of snow by capillary attraction. It is by virtue of this attraction that the snow purifies the atmosphere by absorbing and retarding its noxious and noisome gases and odors.—*Exchange.*

**AN AUSTRALIAN BANQUET.**—A banquet of a novel character has been held in Melbourne. Some time since an acclimatization society was set on foot by Mr. Edward Wilson, who has effected so much in the way of introducing foreign animals, game, singing birds, &c., into Victoria. This society is now numerous, and has several life members. They have had an experimental dinner, at which were served up many of the native animals, birds, and fishes. The bill of fare comprised kangaroo, wallaby, wombat, bandi-coot, opossum, and porcupine, among the animals; black swan, wild turkey, parouet, water-hens, and wattle-birds, among the fowl; and most of the fish of the Australian seas and fresh waters.

**VITALITY OF SEEDS.**—There is a great difference in the duration of vitality of seeds. Those which have much oil in their composition spoil rapidly, owing to the fatty matter becoming rancid. Seeds of different character, particularly those protected by a shell. Cucumber seeds have been kept good nearly 20 years, corn 30 years, and wheat for more than 1000 years.

## GEORGE LESLIE, NURSERYMAN.

OFFERS FOR SALE, THIS SPRING, A GENERAL assortment of Nursery Stock, consisting of

|                              |     |
|------------------------------|-----|
| Apples, Standard and Dwarfs, |     |
| Cherries, do.                | do. |
| Pears, do.                   | do. |
| Plums, do.                   | do. |
| Peaches, do.                 | do. |
| Appricots and Nectarines,    |     |

## GRAPE VINES,

NATIVE AND FOREIGN.

CURRENTS, GOOSEBERRIES, RASPBERRIES, BLACKBERRIES, STRAWBERRIES, &c., &c.

The collection of fruits cultivated is extensive, and embraces all the different varieties that have been found of value, as well as those of late introduction.

The ornamental department is also extensive, consisting of Shade Trees, Shrubs, Roses, Hardy Herbaceous Plants, &c., &c., with a fine collection of Evergreens.

## LARGE TREES

FOR

### STREET PLANTING,

can be supplied, as also Evergreens, and Deciduous Plants for Hedges.

All the above are of FIRST QUALITY. Packing for a distance carefully performed by experienced hands.

All orders by post or left at the Nursery, will have prompt attention.

Catalogues forwarded gratis on receipt of one cent. stamps.

Address

GEORGE LESLIE.

Toronto Nurseries.

Toronto.

TORONTO NURSERIES,

April 1862.

Seeds! Seeds!! Seeds!!!

## JOHN GEORGE WAITE

181 High Holborn, London, England.

HAS THE LARGEST STOCK of VEGETABLE, AGRICULTURAL, and FLOWER SEEDS, IN THE WORLD, and can supply dealers on better terms than any other wholesale house, as he makes most extensive arrangements with none but experienced growers to produce his supply of seeds, which are raised and grown from stock selected under his own personal superintendence, and as they are all cleaned and picked in his own extensive warehouses by an auxiliary strength of several hundred men and women, kept for that purpose, he is enabled to recommend, with the greatest confidence, every description of Seed offered by him for sale, and he therefore invites Seed Dealers to apply for his Catalogue.

TERMS—Cash, or satisfactory references in England.

March, 1862.

6t.

## Fresh Garden, Field, & Flower Seeds.

FOR SPRING SOWING.

JAMES FLEMING & Co, Seedsmen to the Agricultural Association of Upper Canada, beg to inform their friends, and the Farmers of Canada generally, that their stock of Fresh Seeds is now complete and very extensive, embracing almost every kind of seed suitable for the country. The stock of Agricultural Seeds is large and well selected. The vitality of each sort is carefully tested, and their genuineness may be fully relied upon. A large stock of Peas, Timothy, and Clover:

Spring Tares,  
" Wheat,  
Black and White Oats.  
Swede Turnips, Purple top.  
" " Green top.  
" " Laing's Improved.  
" " Skirving's Improved.

White Globe Turnip.  
Yellow Aberdeen "  
" Altringham "  
Waite's Eclipse Turnip.  
Stubble or Six Weeks "  
Mangel, Long Red.

" Long Yellow.  
" Yellow Globe.  
" Red Globe.  
" New Olive Shaped.

Sugar Beet.  
Field Peas, several varieties.  
Marrowfats, "  
Barley, two and four rowed.  
Buckwheat.  
Indian Corn, several varieties  
Alsike and White Clover.  
American Orchard Grass,  
Kentucky Blue Grass.  
English Rye Grass.  
French Lucern.  
Cow and Rib Grass.  
Carrot, White Belgian.  
" Long Orange.  
" Altringham.  
Farsnip, Hollow Crowned.  
&c., &c., &c.

Also a full and general assortment of all kinds of Garden Seeds: a Catalogue of which, with directions for sowing, can be had on application. Agricultural Societies ordering Seeds, will be supplied on liberal terms. Country Merchants supplied with complete assortments of Garden Seeds on Commission, neatly put up in boxes of 200 papers each, for retailing at five cents a paper. Also a large assortment of Flower Seeds, embracing the novelties of the season.

No. 126 Yonge Street, Toronto.

March, 1862.

4-t.



## Agricultural, Horticultural, &amp;c.

The following Books on these subjects to be had at

BAIN'S BOOK STORE,  
46 KING STREET EAST.

|                                           |        |
|-------------------------------------------|--------|
| Dadd's Modern Horse Doctor, cl.....       | \$1 00 |
| Do. American Cattle Doctor, cl.....       | 1 00   |
| Greenon's Treatise on Milch Cows. cl. . . | 60     |
| Mayhew on the Horse, 8mo. ....            | 2 50   |
| Youatt & Martin on Cattle, 12mo. ....     | 1 25   |
| Youatt & Spooner on the Horse.....        | 1 25   |
| Clater's Cattle Doctor, 12mo. ....        | 1 25   |
| Clater's Farriery, 12mo.....              | 1 25   |
| Stewart's Stable Economy, 12mo.....       | 1 00   |
| Miles on the Horse's Foot.....            | 50     |
| Thomson on the Food of Animals.....       | 75     |
| Dogs and their Management by Mayhew.      | 63     |
| Milburn on the Cow.....                   | 25     |
| Martin on Cattle.....                     | 38     |
| Youatt on the Horse.....                  | 25     |
| Martin on the Sheep.....                  | 25     |
| Dayle on Domestic Poultry.....            | 1 50   |
| Watts on the Poultry Yard.....            | 25     |
| Pigeons and Rabbits by Delamee.....       | 25     |
| Martin on the Pig.....                    | 25     |
| Boussingault's Rural Economy.....         | 1 25   |
| Dama's Muck Manual.....                   | 1 00   |
| Sibson's Agricultural Chemistry.....      | 38     |
| Johnston's Agricultural Chemistry.....    | 1 25   |
| Johnston's Elements.....                  | 1 00   |
| Burn's (R. S.) Hints for Farmers.....     | 25     |
| French on Farm Drainage, 12mo.....        | 1 00   |
| Flint on Grasses.....                     | 1 25   |
| Langstroile on the Honey Bee.....         | 1 25   |
| Neil's Fruit, Flower and Vegetable Garden | 1 00   |
| Bridgeman's Kitchen Garden.....           | 60     |
| Buist's Family Kitchen Garden.....        | 75     |
| Fessenden's American Kitchen Gardener     | 25     |
| Thomas' American Fruit Culturist.....     | 1 25   |
| Field on Pear Culture.....                | 1 00   |
| Barry on the Fruit Garden.....            | 1 25   |
| Coles' American Fruit Book.....           | 50     |
| Allen on the Grape Vine.....              | 1 00   |
| Chorlton's Grape Grower's Book.....       | 50     |
| Leuchars on Graperies.....                | 1 25   |
| Saunders' Orchard House.....              | 40     |
| Pardee on Strawberry Culture.....         | 60     |
| Buist's Flower Gardener's Directory.....  | 1 00   |
| Breck's Flower Garden.....                | 1 00   |
| Johnson's Lady's Flower Gardener.....     | 25     |

Any of these Books can be sent by Post to any part of Canada, upon remitting the price and at the rate of 20 cents on the Dollar for postage.

Toronto Feb. 28, 1862.

4 t.

## FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,  
Dover Court.

Toronto, Aug., 1861.

## BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,  
Secretary.

Toronto, 1861.

## Notice of Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

## NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

## FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several pure Durham bull calves to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the well known DUCHESS tribe, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—First come, first served.

Waterdown, Nov. 14, 1861.

4-t.

## THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

JOHN SNELL,

at.

Edmonton, P. O., C. W.

**VETERINARY SURGEON.**

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

**Darlington Agricultural Society.**

**T**HE ANNUAL Exhibition of Stallions of the Darlington Branch of the west Durham Agricultural Society, will be held at Bowmanville, on FRIDAY the 2nd day of May nex, at 12 o'clock, noon.

All horses taking a prize, will be required to have at least one stand in the Township of Darlington, through the season.

Entrance Fee—One Dollar.

R. WINDATT, Sec.

Bowmanville, April 9th, 1862.

**THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**FOR SALE.**

**A**LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, ad Provincial Exhibition.

JAMES COWAN.

Glochmhor, Galt P. O., Oct. 19, 1861.

**Contents of this Number.**

|                                            | PAGE. |
|--------------------------------------------|-------|
| The Alderney, or Jersey Cow.....           | 225   |
| Alsike Clover.....                         | 227   |
| Kohl Rabi.....                             | 228   |
| The Course of Agriculture in the West..... | 228   |
| The Composition, &c., of Milk.....         | 230   |
| Composition & Feeding Value of Straw.....  | 233   |
| The Farmer as an Observer.....             | 237   |
| Pleuro Pneumonia.....                      | 239   |
| Management of Live Stock in France.....    | 240   |
| Barberries for Hedges.....                 | 242   |

**AGRICULTURAL INTELLIGENCE :**

|                                                |     |
|------------------------------------------------|-----|
| Agricultural Societies' Shows this Spring..... | 242 |
| Flax Culture, Meeting at Kingston.....         | 242 |
| The Future of the Royal Farms.....             | 243 |
| Consumption of Roots.....                      | 243 |
| Death of "Windsor".....                        | 244 |
| Novel Importation of Stock.....                | 244 |
| Lonk Sheep at the Royal Society's Show.....    | 245 |
| Evil Effects of pampering Cattle.....          | 245 |

**HORTICULTURAL :**

|                                      |     |
|--------------------------------------|-----|
| Flower Beds, and Bedding Plants..... | 246 |
| Deep Planting of Trees.....          | 247 |
| Japan Lilies.....                    | 242 |

**THE DAIRY :**

|                        |     |
|------------------------|-----|
| Butter and Cheese..... | 248 |
|------------------------|-----|

**VETERINARY :**

|                                            |     |
|--------------------------------------------|-----|
| Epidemic Among Dairy Stock in Britain..... | 250 |
| How to Choose a Farm Horse.....            | 251 |

**MISCELLANEOUS :**

|                                                                  |     |
|------------------------------------------------------------------|-----|
| Mode of Lying in Iceland, Strength of the Tiger, Use of Fat..... | 252 |
| A Sardinian Farm House, The Snow, An Australian Banquet.....     | 253 |
| EDITORIAL NOTICES, Advertisements, &c.....                       | 254 |

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
**Canadian Agriculturist,**

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA

VOL. XIV.

TORONTO, MAY 1, 1862.

No. 9.

**The Farm—A Chemical Manufactory.**

The proposition that a farm is a chemical manufactory may appear somewhat startling to some of our readers, yet it is nevertheless true. And in proportion as this truth is understood by practical men, will the pursuit of agriculture be advanced, and a higher and more rational interest felt in conducting rural affairs. From the dead earth the farmer raises the living plant, on which subsists the living and moving animal. To comprehend the parts taken by the soil and air respectively in the growth of plants, constitutes the only reliable foundation on which to build a true and enduring system of agriculture. The atmosphere which everywhere surrounds us not only contains the food of plants, but it is the key to the rich storage of nourishment which exists in the soil. As a late writer has observed:—

“The mineral part of the plant—its ashes if it were burned—are as necessary to its growth as the carbon and the water are which it obtains from the air; but this mineral part is locked up in the soil; and unless access be given to the air, there it will remain inaccessible and useless. It is on this fact that the fertilizing influence of tillage depends. Growth, like combustion, is a chemical process depending to a great extent on atmospheric action. Poke the fire and you promote the activity of that chemical action which we call combustion; stir the ground and you promote the activity of the chemical action which we call vegetable growth. If a bit of solid platinum be held in a jet of hydrogen gas it will remain unaffected; if a bit of the same metal in the spongy form, in which an immense increase

is given to the surface of the metal, be held in the same jet, it soon becomes red hot. There is the same kind of difference between a clod of clay and a handful of well-tilled loam as there is between the solid and the spongy platinum; and the great part of the explanation of the fertility conferred by tillage is of the same kind as that which explains the differing relations of the gas to the solid and to the spongy platinum. These relations do indeed differ only in degree. The attractive power of the metallic or of the earthen surface is in proportion to the quantity of that surface. Multiply it by making that spongy, open, porous, which had been solid and impervious, and all the effects due to these attractive powers will be similarly multiplied.

It is this attracting surface in the midst of a soil that enables it to retain its moisture, and to hold, as in a strong box, various manuring substances, as well as the products of their mutual decomposition within it; and which also pulls together into close enough contact the various ingredients of air and soil whose constant chemical action on each other is necessary to fertility. In a well tilled soil every particle is thus wrapped round by food for plants, or by that which is extracting this food from it; so that, while the sub-division of these particles within a given bulk of soil is increasing the quantity of surface yielding food for plants, it is equally efficient in increasing the power of the soil to hold free from waste. It is obvious that this latter power is essential to the economy and the profit of cultivation.

The quantitative character of growth is indeed a truth which ought to be impressed upon the mind. Growth is a real building up of the actual atoms supplied to plant or animals as food. As Mr. Morton has said in one of his Essays in the Journal of the Royal Agricultural Society:—

“Agriculture is an art which by its plants and animals enables us to gather up and assort those

particles in the air and in the soil which, thus assorted and combined, are food for man. Such is the theory, and the practice bears it out; for in reality the farmer does but direct a succession of processes whose effect is to detach these particles from useless positions in the earth, air, and water, and comparatively useless positions in substance of plants, in order with them as material to erect the structure of the ripened crop in one case, and of the fattened animal in the other. His every act of cultivation, by assisting the action of atmospheric solvents, loosens these atoms from previous combinations in the soil—his manuring is a direct addition to them—his draining furthers their more ready transmission to the roots of plants—the hoeing by which he stimulates the growing crop, accelerates their building up into its substance—and all the details of their preparation as food have for their aim the easiest and most economical collection of these particles for the use of man either as vegetable food or as meat on the bodies of fattening animals."

We have already seen that the air is the great storehouse from which the bulk of a plant is derived, and that the value of a manure and the fertility of a soil are owing in great measure to the nature of the mineral food for plants which they respectively contain. We must not think that manuring merely *induces* the extra crop, we know not how. Along with air the manure furnishes the very building material out of which the increased produce is *made*. Those very atoms of nitrogen and phosphorus we are adding in that guano, bone-dust, or farm dung—those very particles of potash or of soda which are detached from the soil by the influences which drainage has brought to bear—those very particles of carbon which our plants, vigorous owing to more thorough cultivation, are extracting from the air in the sunshine, may travel different roads, but they will come to an ultimate residence side by side on the flesh and blood of the fattening animal. The various additions we make to our soil, the fertility we extract from it, may be said to occasion the increased produce of grain and meat which succeeds them, but it is in the same way as the stone and the lime *occasion* the buildings of which they are the very substance and material. Strange as it may seem to those who see the manure continually added to the land and the wheat continually taken from it—the dung-cart going and the harvest-cart returning—a plant has no power to convert one thing into another; it can but take the particles we give it. It will flourish if they are food, it will starve if they are withheld, and if they are poison it will die. There is no mysterious connection between a heavy dressing of dung applied to the land and a heavy crop taken from it: it is not the weight, it is the composition of the dressing that must be considered the measure of its value. The crop finds in the manure the very particles which it needs as building material—drainage and tillage are the

hodmen who bring these building materials to the growing plant—plants are at once the masons who put them together and the erection that is in process of completion—and the whole procedure goes on under the eye and according to the laws of the great Master-Builder who contrived the whole wonderful system of vegetable growth, and conferred the life which puts it in exercise.

It is this way of looking upon the growth of the plants, and indeed of the animals also of the farm, which brings out the resemblance which really exists between the business of the farmer and that of the manufacturing chemist. In both certain materials provided by art and nature are made to act and re-act on one another, with a view to the resultant produce which has a value in the market more than enough to repay all the expenses of the process. The farmer, whether he knows it or not, is truly a chemical manufacturer: he may talk of his plowing, sowing, manuring, cultivating, but the real agents at the bottom of all are those laws of the science of chemistry which regulate the combination of the different substances which he uses, and which out of earth, air, and manure, thus provide food for man and beast. It is a true resemblance which exists between the two professions. The fact that life is an agent in the one case and not in the other does not spoil this resemblance. Life in the one case is but the steam engine in the other—the source of power which lifts and mixes, and fetches and carries; the laws of chemical affinity, which are the real agents in both the cases, prevail in the vessels and tissues of living plants and animals just as they do in coppers and retorts of a chemical manufactory. The comparison between the two is, therefore, *just* as well as instructive.

See now if we cannot learn as much from their contrast. In the one you have an art whose processes are all conducted with the greatest nicety away from the influence of any disturbing cause—whose materials of known composition are weighed with accuracy and mixed in the right proportions—whose agents are applied just in the right degree at the proper time and place—its furnaces may be reduced in intensity, or heated at will seven times hotter. In farming, on the other hand, you have an art the most at the mercy of unmanageable elements, whose processes are exposed to wind and weather, storm and calm, rain and sun, heat and cold, on whose practice there exist the greatest differences of opinion among those engaged in it. Consider, on the one side, varying soil, changeable climate, clumsy implements, uncertain materials, contradictory rules and maxims—this is a picture of our agriculture. On the other side you have every where exact weights and measures, known materials, uniformity of process, and rigid exclusion of disturbing influences.

Notwithstanding the superior ity in all these respects of the chemical manufacture, the manufacturer seeks the aid of science for the superin-



tendence of old plans and guidance into new ones—he sedulously watches, carefully observes, and at once obeys every indication which guides the suggestions of the scientific man for the improvement of his methods.

Notwithstanding his greater need of all possible assistance, the agriculturist, also a chemical manufacturer, is still inclined to look askance and with suspicion on the recommendations of science. We do not think he should recklessly adopt changes of practice except they be preceded by corresponding changes of those circumstances out of which old practice has arisen; but we submit this parallel between the farmer and the manufacturing chemist to the consideration of our agricultural readers, as justifying those among them who are inclined to listen to the criticism of the scientific man upon their practice, and to receive his suggestions for its improvement.

### Plaster with Manure.

County of Carlton, March, 1862.

#### *Editors of Canadian Agriculturist.*

Much more attention is now being paid the making and saving of manure than formerly. I remember when the manure in a neighbouring village was considered useless, no one thought it worth taking away, and it was carted, like other rubbish, to any spot where it might be deposited without creating a nuisance; now it is eagerly sought after, and will be taken away and even paid for.

I have no doubt that many persons, who, like myself, are now for the first time directing their attention to agricultural pursuits, would gladly adopt improved means of increasing the quantity and preserving the quality of this, now much coveted commodity. But unfortunately, if we look for information from our more experienced neighbours or endeavour to obtain it from agricultural periodicals, we find nothing but contradiction, and instead of being instructed are only more bewildered.

At page 62 for 1860, you recommend that the manure heap should be “liberally sprinkled with plaster.” I have for some years past, used the scrapings of the poultry house, with truly astonishing effect on Indian corn; but I find difficulty in keeping it until the proper time, fermentation and escape of ammonia set in as soon as put together. Seeing an article on saving hen-manure by mixing it with plaster and packing away in barrels; I had determined on trying it, when I find that “in a dry state plaster liberates ammonia.” I might go on multiplying instances of like contradictions; but will you inform us under what circumstances plaster may be advantageous, applied to animal excrement.

I am, &c.,

BRIAR.

#### REMARKS.

Hen manure, like the dung of birds in general, comprises both the solid and liquid excrements, and consequently possess the highest fertilising power. In warm and moist weather it readily ferments, and discharges ammonia,—even when treated with sulphate of lime. Manures of this description should be kept in small quantities, or, which is better, mixed with large bulks of light earthy or peaty substances, which would prevent excessive fermentation, and absorb ammoniacal gas. Sulphate of lime, (plaster) has been found beneficial in sprinkling over the floors of byers and stables, and may be advantageously applied to animal excrements, when mixed with earthy and vegetable matters in the form of compost, and to farm-yard manure. Powdered charcoal answers the same purpose in a much higher degree. There is no doubt too much contradiction in the opinions and writings of agriculturists; some of which is inevitable to a pursuit so peculiarly experimental and progressive as that of agriculture. Upon more careful examination, however, much of these anormities will be found more apparent than real; and notwithstanding the obscurity which, to some extent, still surrounds the mode of action of manuring substances, it is gratifying to know that more enlightened attention is constantly being paid by both practical and scientific men to this most important department of improved husbandry.

### Condiments.

Everybody has heard of Thorley and Thorley's Food. Like Holloway, he is everywhere. We cannot travel but we observe his illustrated advertisements, stuck on the walls of every railway station, wherein worn-out Rozinantes are represented, on the one hand, at the last kick, and on the other in full health and vigour, the result, as we are led to suppose, of the use of his wonderful “Condiment.” We can scarcely open a newspaper but “Thorley” stares us in the face; nay, more, like the great Nelson, he has even a Gazette of his own, a special record of his victories over the direful effects of starvation and disease, and a castigating weapon to be laid on the shoulders of all who dare to doubt the infallibility of his life-giving condiment.

Wednesday, the 19th inst., was a great day for Thorley. Under the sponsorship of Mr. Beale Browne, the merits of Thorley's Food was fully discussed at one of the open weekly council meetings of the Royal Agricultural Society of

England, when all the *pros* and *cons* on the subject were fairly brought forward.

The objects which Mr. Beale Browne had in view in introducing the subject of Thorley's food to the consideration of the meeting were, first, to create a friendly discussion upon a matter which he considered important to agriculturists, and, next, to give his own experience regarding it, especially when used in the case of such animals as happen to be in declining condition. He considered scientific men in error when they cried down Thorley's food, and contended that experience proved that it possesses certain fattening qualities. This he illustrated in the following manner:—

"Two or three years ago, through the illness of some of my family, I thought I should give up agriculture and go abroad for some years. I sold off, therefore, my stock of sheep, but I retained a few valuable favorites. I was away for a certain time, and during that time these animals got reduced to a very low ebb. They were, in point of fact, so reduced that about half a dozen of them died. They were broken-mouthed, and some of them had lost their teeth. They were living in a fine piece of clover when I saw them in the spring of the year, and at that time they were a perfect bag of bones, though they were eating oil-cake and corn, which did not seem to improve them in the least. I was very much distressed at the state in which they were, and thinking, at all events, it could not do much harm, if it did no good, I was determined to try Mr. Thorley's food. I therefore wrote to Mr. Thorley to send down a cask of his food, with directions for use. I confess that I was not very sanguine as to the result, because, as I stated before, I was rather prejudiced against it. The food was given with oil-cake and corn, and the animals improved in the most extraordinary degree—so much so, that after they had taken it three or four weeks I really hardly knew them again. When the barrel of food was exhausted I left off Thorley's condiment, and they left off corn and cake and went to grass. They did remarkably well, and the condiment seemed to have entirely renovated the whole constitution of the animals. I saw them about a fortnight ago, when they were in very fine condition for lambing. Some of them had got double lambs, and I must say I should never wish to see ewes in a finer condition than they were in."

Mr. Beale Browne proceeded to argue that the Royal Agricultural Society should consider the matter fairly, not "as dictators to agriculturists generally," but as the "exponents of the wishes and views of the subscribers at large," so that the price of Thorley's food might be reduced, owing to the saving of his immense expenditure in advertising which would follow the official recognition by the society of the value of the condiment. We doubt much if the society will ever take such a step. Thorley is not the only "condiment" manufacturer, and it would be rather too much to expect that the society would place one

manufacturer above all others, simply to allow that man to sell at a reduction of 100 per cent. from his present rates. If Thorley is desirous of securing "a largely increased consumption of his condiment," and to bring it "within the reach of all parties interested in farming operations," which Mr. Beale Browne considered "would be a great advantage," let him at once announce his intention to reduce the price to £18 or £20 per ton, guaranteeing that it shall be as good in point of quality as it is at present, and then let it stand on its own merits; for in such a case, if it is worth the money, it will succeed without any official recognition of it on the part of any Royal Agricultural Society.

In the course of the discussion which followed the reading of Mr. Beale Browne's remarks, it was stated by Mr. Cantrell that he had experienced considerable advantage from giving "condiments," those manufactured by other parties as well as by Thorley, to cart horses out of condition. He gave each horse "rather less than half a pint per day," mixed with damp chaff. Mr. Henry Cotton had also found Thorley's food serviceable in the case of an Irish mare which had suffered severely on her passage to England; he had likewise found it useful in the case of dogs, pigs, and milch cows, improving the latter both in point of flesh and milk. We hope this will form, therefore, the subject of a column in Professor Voelcker's present investigation into the effects of food upon milk.

Mr. Simpson, although "a manufacturer of condiments for cattle," did not attend the meeting for the purpose of advertising his own condiment. At the same time, he contrived to say a few words in its favour, showing that "three years ago he delivered an article, which, in his opinion, was fully equal to Mr. Thorley's, at £18 per ton," further stating that although he has to allow his agents a considerable commission, he can make an article which will give great satisfaction to the consumers at 26s. per cwt., and, as trade increases, "he could make it even at much less than that." A very great reduction, indeed, from the prices at present charged by Mr. Thorley. Mr. Simpson considered, however, that "neither the condiment of Thorley, or that of any body else is superior to linseed" as food for cattle, and that "if we want to rear a calf on skim milk instead of new, use linseed, by all means; but use the condiment in the same way as that in which pepper and salt is used for a beef stack, and sprinkle a little of it over the other food." Mr. Simpson's opinion regarding condiments in general was given in the following terms:—

"Then, again, in regard to the feeding properties of condiment, I don't apprehend that they do, in point of fact, contain any greater amount of feeding properties than could be obtained from good simple food, such as oil-cake. The sole value I attribute to them is the health-giving properties which they undoubtedly possess, and which must depend to a great extent, upon



the proper admixture of the ingredients of which the condiment is formed. That, I believe, is a very important consideration, and is, in my opinion, the only one upon which success or failure depends."

These are all, evidently, honest opinions, coming, as they do, from an interested party, and will have, doubtless, due weight with consumers, leading to a greater consumption of honestly manufactured "condiments" than any amount of elaborate puffing; for, as Mr. Thompson, M. P., and Mr. Barker very properly said, if any prejudice existed against Thorley's food, "it has been created by Mr. Thorley himself, in advertising it at great cost, and, as Mr. Browne says, professing too much." Let the price be such as people can afford; prices in accordance with the intrinsic value of the article; let the professions as to what it will effect be restrained within reasonable limits—prevented, in fact, from trenching on the bounds of quackery, and there is no fear but that condiments will be used whenever it is found advantageous to do so.

Major Munn, like Mr. Beale Browne, was most anxious that all people would understand that he was totally unconnected with Mr. Thorley, did not even know him, had never seen him, and had no personal interest in the success or the failure of his food. But Major Munn thought it right to state that "a great many lambs" of his, "in a very bad condition," affected with "a strong consumptive cough and a small thread-like worm in the air vessels," had been saved—"the whole batch"—by Thorley's food. That another large lot of "refuse lambs, nearly worthless," for which he could not get "more than 6s. or 7s., or, at most, 10s a piece," had all, with the exception of five, "recovered wonderfully," and brought afterwards "45s. to 46s. a piece." That Thorley's food had been most effective in putting some of his old horses in excellent condition; that it had also brought round another horse "that was troubled with worms," even after his career had been nearly brought to a close by means of "a dose of capital stuff" administered to him by the groom; so that he considers Thorley's food "has answered the purpose of a restorative or a medicine," "is a very good ingredient," and he shall, therefore, "continue to use it for horses, cattle, pigs, and dogs."

Mr. Freere—editor of the Society's journal—spoke also in favor of Thorley's food, but "only as valuable for animals that are off their food, and not in a thriving condition," and with his testimony all the array of *pious* in its favor concluded.

The other side of the question was opened by that eminent chemist, Mr. J. B. Lawes, who allowed that "there are certain valuable qualities appertaining to this description of food." It was, however, "entirely a question of medicine," and he had fully satisfied himself that there were tonic properties in the food. Mr.

Lawes referred to his own experiments, the details of which have been given in our columns and concluded by saying that "no science whatever is required to show that those things which tend to stimulate very largely the action of the stomach often occasion a consumption of a larger quantity of food passing through the animal's stomach. But it does not follow that they will make it assimilate, and, therefore, as food, he did not think that these condiments are to be at all recommended. On the other hand, if you give them as medicines, it will, no doubt, be found that they possess considerable medicinal properties which will enable animals to digest food when they would not otherwise be able to do so."

Professor Simmonds followed on the same side; but as his valuable remarks will scarcely bear to be condensed, we shall give them, at full length, in our next impression, and we do so because the learned professor's opinions on all matters relating to the health of animals are most deserving of consideration.

Altogether, the question of condiments has been left very much as it was; unless, indeed, the unanimously expressed opinion of the meeting regarding the excessively high prices charged by Mr. Thorley for his "Food" shall have the effect of inducing him to lower them some 80 or 100 per cent., and thus try the effects of more reasonable prices on the consumption of the article which he manufactures, and in connection with which he has gained so much notoriety.—*Irish Farmer's Gazette*.

---

## Horticultural.

---

### Trees Injured by Mice.

A Correspondent from Haldimand asks, "whether there is any way to prevent Mice from barking young fruit trees, or any cure after they are barked short of setting new ones?"

We know of no better precaution against young fruit trees being injured by Mice during winter than by keeping the ground free of long grass, or any kind of vegetable matter lying thickly around the trees. Open ditches should be kept free of such matters, as they harbour mice in the winter. Treading down the snow after each fall, two or three feet around the tree will be found beneficial, and, if the trees have been mulched in the fall, should never be neglected. If the tree has been deprived of its bark all round, there is no alternative but re-planting. In cases of partial barking, the appl-

cation of the following composition to the wounded part has been found beneficial:—two parts of cow dung intimately mixed with one part each of quick lime and wood ashes. Folding round the stem of the tree pieces of cotton or linen cloth, and smearing the surface with tar as high as the snow is likely to reach, before winter sets in, is often practised with advantageous results.

### On Foliage Plants.

*Read before the Hamilton Horticultural Club, by Thomas Buchanan, Gardener to W. P. McLaren, Esq., of that City.*

MR. PRESIDENT AND GENTLEMEN,—In submitting to your notice a short paper on Foliage Plants, that is, plants with ornamental foliage, I will confine myself to a few, which I think are really acquisitions, wherever a collection of plants is kept, and more especially if there be a conservatory required to be kept gay throughout the year. Every gardener knows the difficulty of keeping such a house furnished with plants in bloom at certain seasons, however large and select his collection of flowering plants may be; but, with a fair collection of foliage plants the task is rendered comparatively light. The most of them are of easy culture and of rapid growth, so that large plants can be grown in a short time. They delight in a warm, moist temperature, and on bright days they require to be shaded from about ten until four, P.M., for a very few bright sunny days would render the beautiful contrasting colours very unsightly of a great many of them. They are greatly benefited by a little liquid manure, for the more rapidly they grow the handsomer they look.

In describing a few of them, I will begin with *Aspidistra Lurida Variegata*,—somewhat after the style of *Arundo Variegata*, but of much stronger growth, with long lanceolate foliage, from four to six inches broad, and from two to three feet long. Some of the leaves are distinctly striped with white, yellow, and orange stripes, on a deep green ground; every leaf is marked distinctly different.

*Alocasia Metalica*,—With rich luscious bronzia leaves, which it retains the whole year.

*Caladium Argyrites*,—An exquisitely beautiful small plant, with small oblong heart-shaped ears, very distinctly marked with blotches of snow white upon a rich green ground. This plant requires a very high temperature to grow it well. It is the gem of caladiums when well grown.

*Caladium Chantini*,—A more robust grower than the preceding, with large oblong heart-shaped leaves on rosea-tinted foot-stems, elegantly

marked with a large crimson centre, and uniformly spotted over with a rosea white, upon a rich green ground; it is a noble-looking plant when it comes to measure about four feet through, with leaves measuring twenty inches long by ten across.

*Caladium Bellymerii*,—Is a less robust grower than *Chantini*, with large oblong heart-shaped leaves, elegantly transversed with silvery veins, on a dark green ground.

*Cissus Discolor*,—The most useful and highly ornamental climbing plant that we have got yet for covering a back wall or a pillar. It is a very rapid grower, and delights in a very moist, warm temperature, rich loamy soil, with frequent applications of liquid manure. After the plant is fairly started it will cover some hundreds of square feet on a back wall, in six or eight months; and, if properly shaded, is truly a magnificent sight. One season is long enough to keep the same plant, as old plants do not do so well. The leaves are oblong, heart-shaped, showing a rich chocolate crimson under side, whilst the upper surface shows a rich purplish ground, with whitish blotches, margined with a crimson hue.

*Begonias* have of late become so numerous that it is no easy matter to know the best, all possessing more or less beauty. Amongst the best are *Begonia Marshalli*, a very striking variety, with very large, slightly angular, macronate, cerrate, cordate, ovate, leaves, very unequal at base, with a large silvery zone, and irregular silvery blotches, between the zone and margin, on a dark rich green ground.

*Begonia Silver Queen*,—Is a smaller grower, with small silvery blotches all over the leaf.

*Begonia Lord Clyde*,—Another small-growing variety, with a silvery zone inside the zone or centre of the leaf, bright crimson, very attractive.

*Begonia President Van Vanden Hecke*, a more robust grower; leaves marked with a silvery zone, and all dotted over as if nicely sanded, on a dark green ground.

*Begonia Pearl*,—A beautiful variety, looks as if set with pearls all over the leaf.

The *Crotons* are a very interesting class of stone shrubs. That most powerful purgative, croton oil, is obtained from the seeds of croton Tiglium.

*Croton Variegata*,—Is a very beautiful shrub, retaining its foliage all the year, with lanceolate leaves, striped with whitish yellow, on a deep green ground.

*Croton Picta*,—Like the preceding in habit, blotches of white, shaded with crimson on a green ground.

*Croton Longifolia*, a smaller growing variety with longer leaves with white blotches on a green ground.

*Cynophyllum Magnificum*,—This noble plant is, without exception, one of the finest



plants yet introduced in its truly magnificent large oblong, ovate leaves. The upper surface is of a remarkably rich deep metallic tinted olive green, which is transversed lengthways by a large prominent silvery gray midrib, and the entire surface is again crossed by the minuter light veins, which diverge horizontally from the centre midrib to the margin.

*Campylobotrys Regalis*.—Leaves of a rich satin green, regularly transversed by silvery nerves, the whole lighted up by a bright metallic lustre and gloss.

*Dracæna Terminalis*.—A beautiful plant; grows to the height of about eight feet, with long lanceolate leaves, beautifully streaked with rose-coloured stripes.

*Dracæna Ferra*.—Resembling the foregoing in habit, with very dark purple, long, lanceolate leaves.

*Dieffenbachia Variegata*.—A rather tall growing plant with lanceolate leaves, irregularly blotched with white on a rich green ground.—This plant looks best when about three feet high.

*Echites putans*.—A very neat climbing plant, with elliptical leaves. Feathery veined with light purple veins—like net-work—in a rich dark greenish purple ground.

*Gesneria Zibrina*.—With gloxinia like leaves, beautifully rayed with very dark purplish rays on a dark green ground, the young leaves look very like a rich velvet.

*Gesneri Donckelaari*.—Contrasts well among other plants, with its almost black foliage.

*Maranta Regalis*.—Is a very neat growing plant, with numerous erect pointed oblong leaves, showing a rich chocolate crimson under surface, whilst the upper surface is of a glossy—very dark green—with bright rosea carmine bonds or lines diverging from the midrib to the margin of the leaf.

*Maranta Zebrina*.—A very distinct and beautiful plant, with long oval acuminate leaves, of a rich shining olive green, beautifully rayed with dark velvety rays.

Among Ferns there are two with ornamental foliage, well worthy of a place in every collection.

*Pteris Argyeria*.—A very robust grower.—Fronds from two to three feet, supported on long foot stems, the fronds are of a deep green, with a broad central stripe of silvery hue down each branch which produces a charming effect.

*Pteris Tricolor*.—A new and very remarkably species, not so vigorous in habit as *Argyeria*, attaining the height of two feet. The fronds are of a deep purple green with a silvery stripe down the centre. The ribs being of a deep red, this combination of colours, with the delicate foliage, produces an effect peculiarly beautiful. This is without doubt one of the best ferns yet introduced. In a collection of foliage plants shown by Mr. Vetch at the Kensington

Gardens, in which Mr. Beaton speaks very highly of the following plants in Mr. Vetch's collection, *Campylobotris Refulgens*, and *Theophrasta Imperialis* as being exquisite, and of *Thurispis dolabrata*, as being the best foliage plant yet sent out. *Pandanis javanicus*, *Folis variegata* and *Pandanis Uvilis*, should be in every select collection however small.

I may at some future time give a few hints as to the growing of some of these named above.

## Seventeenth Annual Exhibition of the Provincial Agricultural Association, to be held at Toronto, 1862.

[The precise days will be announced hereafter.]

## RULES AND REGULATIONS.

### MEMBERSHIP.

1. The members of the Agricultural Societies of the several Townships within the County, or Electoral Division or United Counties, wherein the Annual Exhibition may be held, and the members of the county or Electoral Division Society, shall be also members of the Association for that year, and have members' tickets accordingly; provided the Agricultural Societies of the said Townships, or the Society of the said County or Electoral Division or United Counties, shall devote their whole funds for the year, including the Government Grant, in aid of the Association, and shall pay over the same to the Treasurer of the Association two weeks previous to the Exhibition.

2. The members of the Board of Agriculture, and of the Board of Arts and Manufactures, the Presidents and Vice-Presidents of all lawfully organized County Agricultural Societies, and of all Horticultural Societies, are members of the Agricultural Association for Upper Canada, *ex-officio*. The payment of \$1 and upwards constitutes a person a member of the Association for one year; and \$10 for life, when given for that specific object, and not as a contribution to the local funds.

3. Members can enter articles for competition in every department of the Exhibition, at any time previous to the dates below mentioned, and all who become members previous to or on the Saturday preceding the show will be furnished with tickets admitting them to the grounds during the whole time of the show, without additional charge.

### ENTRIES.

4. No one but a member shall be allowed to compete for prizes except in class, 44, sections 9 to 15 of 47, and 54.

5. All entries must be made on printed forms, which may be obtained of the Secretaries of Agricultural Societies, or of Mechanics' Institutes, free of charge. These forms are to be filled up and signed by the exhibitor, enclosing a dollar for membership, and sent to the Secretary of the Association, Board of Agriculture, Toronto, previous to one of the following named dates:—

6. *Horses, Cattle, Sheep, Swine, Poultry.* Entries in these classes must be made, by forwarding the entry form, as above mentioned, filled up, and member's subscription enclosed, on or before Saturday, five weeks preceding the show.

7. In the classes of Blood Horses and pure bred cattle, full pedigrees, properly certified, must accompany the entry. No animals will be allowed to compete as pure bred, unless they possess regular Stud or Herd Book pedigrees, or satisfactory evidence be produced that they are directly descended from such stock. In the class of Durham cattle particularly, no animal will be entered for competition, unless the pedigree of the same be first inserted in the English or American Herd Book, or in the Upper Canada Stock Register, kept at the office of the Board of Agriculture.

8. *Grain, Field Roots, and other Farm Products, Agricultural Implements, Machinery, and Manufactures generally,* must be entered previous to or on Saturday, three weeks preceding the show.

9. *Horticultural Products, Ladies' Work, the Fine Arts, &c.,* may be entered up to Saturday, one clear week preceding the show.

10. After these dates for the respective classes, no entry will be received. The entry paper and subscription money will be returned to any person forwarding them.

11. In the live stock classes, the entry must in every instance be made in the name of the *bona fide* owner; and unless this rule be observed no premium will be awarded, or if awarded will be withheld.

12. In all the other classes entries must be made in the names of the producers or manufacturers only.

13. In the Agricultural department the competition is open to exhibitors from any part of the world.

14. In the Arts and Manufactures department, no article can be entered for competition unless it be the growth, product, or manufacture of Canada; and no money premium will be awarded except in accordance with this rule; articles of foreign manufacture, however, may be entered for exhibition only, and will be reported upon by the judges, according to their merits, or certificates awarded them, if deserving. Manufacturers are requested to furnish with their articles exhibited, the quantity they can produce, or supply, and the price, for the information of the

Judges; whose division will be based on the combination of quality, style, and price, and the adaptation of the article to the purpose or purposes for which it is intended.

15. No person shall be allowed to enter for exhibition more than one specimen in any section of a class, unless the additional article be of a distinct named variety, or pattern, from the first. This rule not to apply to animals, but to apply to all kinds of grain, vegetable products, fruit, manufactured articles, &c., in which each additional specimen would necessarily be precisely similar to the first.

16. On the entry of each animal or article, a card will be furnished the exhibitor specifying the class, the section and the number of the entry, which card must remain attached to such animal or article during the exhibition.

#### TRANSPORT OF ARTICLES, PLACING THEM ON EXHIBITION, AND CHARGE OF THEM WHILE THERE.

17. All articles for Exhibition must be on the grounds on Monday, of the show week, except live stock, which must be there not later than Tuesday at noon. Exhibitors of machinery and other heavy articles, are requested to have them on the grounds as far as possible during the week preceding the show.

18. Exhibitors must provide for the delivery of their articles upon the show ground.—The Association cannot in any case make provision for their transportation, or be subjected to any expense therefor, either in their delivery at or return from the grounds; all the expenses connected therewith must be provided for by the Exhibitors themselves.

19. Articles not accompanied by their owners may be addressed to the care of the superintendent of the exhibition, who will receive them, on their being delivered at the grounds, but in no case will such articles be brought on the grounds and placed on exhibition, except by and at the expense of the owners or their authorized agents.

20. Exhibitors on arriving with their articles will apply to the superintendent of the grounds, who will be stationed within the entry gate, and will inform them where the articles are to be placed.

21. Exhibitors will at all times give the necessary personal attention to whatever they may have on exhibition, and at the close of the show take entire charge of the same.

22. No articles or stock exhibited will be allowed to be removed from the grounds, till the close of the exhibition, upon the delivery of the President's address, on Friday afternoon, under the penalty of losing the premiums.

23. While the Directors will take every pos-



sible precaution, under the circumstances, to insure the safety of articles sent to the exhibition, yet they wish it to be distinctly understood that the owners must themselves take the risk of exhibiting them; and that should any article be accidentally injured, lost, or stolen, the Directors will give all the assistance in their power towards the recovery of the same, but will not make any payment for the value thereof.

#### STEAMBOATS, RAILROADS, CUSTOMS.

24. The Association will make arrangements with Steamboat and Railroad proprietors for carrying articles and passengers at reduced rates.

25. Arrangements will be made with the Customs department for the free entry of articles for competition.

#### ADMISSION TO THE GROUNDS.

26. Tickets from the Secretary's Office will be furnished each person becoming a member previous to or on Saturday, preceding the Show, which will admit himself only, free to every department of the exhibition, during the Show. Life members admitted free throughout the Exhibition.

27. No members' tickets will be issued after the above last mentioned Saturday evening, but those issued up to that time will be good till the close of the show.

28. Necessary attendants upon stock and articles belonging to exhibitors, will be furnished with admission tickets with their names written upon them, which ticket will be good at the *Exhibitors' Gate only*, during the show.

29. The admission fees to non-members, on Tuesday and Wednesday, will be half-a-dollar, and on Thursday and Friday, a quarter dollar, each time of entering through the gates.

30. Tickets of admission to those who are not members, will be issued on and after Tuesday morning, at 25 cents each,—two such tickets to be given up at the gates each time of admission, on Tuesday and Wednesday, and one such ticket on Thursday and Friday, in accordance with the above rates. Children under fourteen years of age, half-price. Carriages to pay one dollar each admission; each occupant, except the driver, to be also provided with the usual admission ticket. Horsemen half-a-dollar.

#### JUDGES AND THEIR DUTIES.

31. The judges will be appointed by the council of the Association previous to the Exhibition, and will receive a circular informing them of the fact and inviting them to act.

32. The judges are invited to report themselves at the Secretary's office, presenting their circular of appointment, immediately on their arrival at the grounds.

33. The judges will meet, at the committee

room on the grounds, on Tuesday, at 10 o'clock, A. M., to make arrangements for entering upon their duties, and will then be furnished with the committee books containing the numbers of the entries in each class.

34. No person shall act as a judge in any class in which he may be an exhibitor.

35. In addition to the stated premiums offered for articles enumerated in the list, the judges will have the power to award discretionary premiums for such articles, not enumerated, as they may consider worthy, and the Directors will determine the amount of premium.

36. In the Fine Arts and Mechanical Department, Diplomas will be awarded—in addition to the money prizes—to any specimen evincing great skill in its production, or deemed otherwise worthy of such a distinction, on its being recommended by the Judges and approved of by the Committee to whom all such matters shall be referred.

37. In the absence of competition in any of the Classes, or if the Stock or articles exhibited be of inferior quality, the Judges will exercise their discretion as to the value of the premiums they recommend.

38. Each award must be written in a plain careful manner, on the blank page opposite the number of the entry; and the reasons for the award should be stated when convenient.

39. No person will be allowed to interfere with the judges while in the discharge of their duties. *Exhibitors so interfering will forfeit their rights to any premium to which they might otherwise be entitled.*

#### DELEGATES, THE ANNUAL MEETING, &c.

40. Delegates and members of the Press are requested and expected to report themselves at the Secretary's office immediately on their arrival.

41. The Annual Meeting of the Directors of the Association will take place on the grounds on Friday morning, at 10 o'clock.

42. Delegates from County Societies desiring to obtain a portion of the Canada Company Prize Wheat for their Counties, will please apply for it before leaving the exhibition, and take it with them from thence.

#### THE GENERAL SUPERINTENDENT.

43. A General Superintendent will be appointed, who will have the entire supervision of the grounds and the arrangements of the Exhibition. He will have an office upon the ground, where all persons having inquiries to make in relation to the arrangements will apply.

#### PAYING THE PREMIUMS.

44. The Treasurer will be prepared to commence paying the premiums on Saturday,

at 9 a. m., and parties who shall have prizes awarded them are particularly requested to apply for them before leaving Toronto, or leave a written order with some person to receive them, stating the articles for which prizes are claimed.

45. Persons entitled to cash premiums must apply for them at the Secretary's office, who will give *Orders on the Treasurer* for the amount.

46. These orders must be endorsed, as they will be payable to *order*, not to *bearer*, and on presentation to the Treasurer, properly endorsed, will be paid, either in cash, or by cheque on the Bank.

47. Orders for premiums not applied for on Saturday as above will be given by the Secretary, and the amount forwarded by the Treasurer, on receipt of proper instructions.

#### MISCELLANEOUS.

48. Provender will be provided by the Association for live stock at cost price. For information Exhibitors will apply to the Superintendent of the grain and fodder department at his office.

49. An auctioneer will be on the ground after the premiums are announced, for the purpose of selling any animal or article which the owner may wish to dispose of, and every facility will be afforded for the transaction of business.

50. In case the Directors shall require any particular information in reference to animals or articles taking first prizes, the owners will be expected to transmit it when requested to do so.

#### Programme for the Week.

1. **MONDAY** will be devoted to the final receiving of articles for exhibition, and their proper arrangement. None but officers and members of the Association, judges, exhibitors, and necessary attendants will be admitted.

2. **TUESDAY.** The judges will meet in the Committee Room at 10 A. M., and will commence their duties as soon as possible afterwards. As soon as they have made their awards, they will report to the Secretary, and will then be furnished with the prize tickets, which they are requested to place on the proper articles before dispersing. Non-members admitted this day on payment of 50 cents each time.

3. **WEDNESDAY.** The judges of the various classes will complete their awards, and will place all of the prize tickets if possible. Admission this day the same as yesterday.

4. **THURSDAY.** All the remaining prize tickets not yet distributed by the judges will be placed upon the proper articles this morning, before 9 o'clock, if possible. The public will be admitted this day on payment of 25 cents by each person, each time of entering. The amateur bands of music in competition for prizes will play upon the grounds.

5. **FRIDAY.** The annual meeting of the Directors of the Association will take place at 10 A.M., in the Committee Room. The bands will continue to play upon the grounds. The President will deliver the Annual Address at 2 P.M., after which the Exhibition will be considered officially closed, and exhibitors may commence to take away their property. Admission to-day the same as yesterday.

6. **SATURDAY.** The Treasurer will commence paying the premiums at 9 A. M. Exhibitors will remove all their property from the grounds and buildings. The gates will be kept closed as long as necessary, and none will be admitted except those who can show that they have business to attend to.

#### PRIZE LIST.

##### AGRICULTURAL DEPARTMENT.

(COMPETITION OPEN TO THE WORLD.)

##### *Live Stock, Agricultural and Horticultural Products, Implements, &c.*

**MEDALS.**—In all cases the winner of a first prize of \$40 will be entitled to the Association's Gold Medal, value \$40, instead, if he prefer it: and the winner of the first prize of \$20, or upwards will be entitled to the Silver Medal, at \$10, if he prefer it, with the difference in money.

##### HORSES.

##### CLASS I.—BLOOD HORSES.

| <i>Sect.</i>                                    |         | \$ | c. |
|-------------------------------------------------|---------|----|----|
| 1. Best thorough-bred stallion.....             |         | 40 | 00 |
| 2d                                              | do..... | 25 | 00 |
| 3d                                              | do..... | 12 | 00 |
| 2. Best 3 years old stallion.....               |         | 22 | 00 |
| 2d                                              | do..... | 14 | 00 |
| 3d                                              | do..... | 7  | 00 |
| 3. Best 2 years old stallion.....               |         | 14 | 00 |
| 2d                                              | do..... | 10 | 00 |
| 3d                                              | do..... | 5  | 00 |
| 4. Best yearling colt.....                      |         | 8  | 00 |
| 2d                                              | do..... | 6  | 00 |
| 3d                                              | do..... | 4  | 00 |
| 5. Best thorough-bred stallion of any age,..... | Diploma |    |    |



|                                                                        |         |                                         |          |
|------------------------------------------------------------------------|---------|-----------------------------------------|----------|
| 6. Best 3 years old filly.....                                         | \$18 00 | 5. Best stallion of any age,.....       | Diploma. |
| 2d do.....                                                             | 11 00   | 6. Best French Canadian stallion.....   | \$30 00  |
| 3d do.....                                                             | 7 00    | 2d do.....                              | 20 00    |
| 7. Best 2 years old filly.....                                         | 14 00   | 3d do.....                              | 10 00    |
| 2d do.....                                                             | 10 00   | 7. Best 3 years old roadster filly..... | 18 00    |
| 3d do.....                                                             | 6 00    | 2d do.....                              | 11 00    |
| 8. Best yearling filly.....                                            | 8 00    | 3d do.....                              | 7 00     |
| 2d do.....                                                             | 6 00    | 8. Best 2 years old filly.....          | 14 00    |
| 3d do.....                                                             | 4 00    | 2d do.....                              | 9 00     |
| 9. Best mare and foal, or evidence that<br>the foal has been lost..... | 22 00   | 3d do.....                              | 4 00     |
| 2d do.....                                                             | 14 00   | 9. Best yearling filly.....             | 8 00     |
| 3d do.....                                                             | 6 00    | 2d do.....                              | 6 00     |
|                                                                        |         | 3d do.....                              | 4 00     |

## 10. Extra entries.

Pedigree to be produced in this class.

## CLASS II.—AGRICULTURAL HORSES.

|                                                                           |       |                                                |       |
|---------------------------------------------------------------------------|-------|------------------------------------------------|-------|
| 1. Best stallion for agricultural purposes.....                           | 40 00 | 11. Best pair of matched carriage horses.....  | 20 00 |
| 2d do.....                                                                | 25 00 | 2d do.....                                     | 15 00 |
| 3d do.....                                                                | 12 00 | 3d do.....                                     | 10 00 |
| 2. Best 3 years old stallion.....                                         | 22 00 | 12. Best single carriage horse in harness..... | 10 00 |
| 2d do.....                                                                | 14 00 | 2d do.....                                     | 8 00  |
| 3d do.....                                                                | 7 00  | 3d do.....                                     | 6 00  |
| 3. Best 2 years old stallion.....                                         | 14 00 | 13. Best saddle horse.....                     | 10 00 |
| 2d do.....                                                                | 10 00 | 2d do.....                                     | 8 00  |
| 3d do.....                                                                | 7 00  | 3d do.....                                     | 6 00  |
| 4. Best yearling colt.....                                                | 8 00  | 14. Extras.....                                |       |
| 2d do.....                                                                | 6 00  |                                                |       |
| 3d do.....                                                                | 4 00  |                                                |       |
| 5. Best agricultural stallion any age, Diploma.....                       |       |                                                |       |
| 6. Best 3 years old filly.....                                            | 18 00 |                                                |       |
| 2d do.....                                                                | 11 00 |                                                |       |
| 3d do.....                                                                | 7 00  |                                                |       |
| 7. Best 2 years old filly.....                                            | 14 00 |                                                |       |
| 2d do.....                                                                | 9 00  |                                                |       |
| 3d do.....                                                                | 4 00  |                                                |       |
| 8. Best yearling filly.....                                               | 8 02  |                                                |       |
| 2d do.....                                                                | 6 00  |                                                |       |
| 3d do.....                                                                | 4 00  |                                                |       |
| 9. Best brood mare and foal, or evidence that the foal has been lost..... | 22 00 |                                                |       |
| 2d do.....                                                                | 14 00 |                                                |       |
| 3d do.....                                                                | 6 00  |                                                |       |
| 10. Best span matched farm or team horses.....                            | 20 00 |                                                |       |
| 2d do.....                                                                | 15 00 |                                                |       |
| 3d do.....                                                                | 10 00 |                                                |       |

## 11. Extra entries.

## CLASS III.—ROAD OR CARRIAGE HORSES.

|                                                                     |       |                                                                           |          |
|---------------------------------------------------------------------|-------|---------------------------------------------------------------------------|----------|
| 1. Best roadster or carriage stallion, 4 years old and upwards..... | 40 00 | 5. Best heavy draught stallion.....                                       | 40 00    |
| 2d do.....                                                          | 25 00 | 2d do.....                                                                | 25 00    |
| 3d do.....                                                          | 12 00 | 3d do.....                                                                | 12 00    |
| 2. Best do. 3 years old.....                                        | 22 00 | 2. Best 3 years old stallion.....                                         | 22 00    |
| 2d do.....                                                          | 14 00 | 2d do.....                                                                | 14 00    |
| 3d do.....                                                          | 7 00  | 3d do.....                                                                | 7 00     |
| 3. Best do. 2 years old.....                                        | 14 00 | 3. Best 2 years old stallion.....                                         | 14 00    |
| 2d do.....                                                          | 10 00 | 2d do.....                                                                | 10 00    |
| 3d do.....                                                          | 5 00  | 3d do.....                                                                | 5 00     |
| 4. Best yearling colt.....                                          | 8 00  | 4. Best yearling colt.....                                                | 8 00     |
| 2d do.....                                                          | 6 00  | 2d do.....                                                                | 6 00     |
| 3d do.....                                                          | 4 00  | 3d do.....                                                                | 4 00     |
|                                                                     |       | 5. Best draught stallion, any age.....                                    | Diploma. |
|                                                                     |       | 6. Best 3 years old filly.....                                            | 18 00    |
|                                                                     |       | 2d do.....                                                                | 11 00    |
|                                                                     |       | 3d do.....                                                                | 6 00     |
|                                                                     |       | 7. Best 2 years old filly.....                                            | 14 00    |
|                                                                     |       | 2d do.....                                                                | 9 00     |
|                                                                     |       | 3d do.....                                                                | 4 00     |
|                                                                     |       | 8. Best yearling filly.....                                               | 8 00     |
|                                                                     |       | 2d do.....                                                                | 6 00     |
|                                                                     |       | 3d do.....                                                                | 4 00     |
|                                                                     |       | 9. Best brood mare and foal, or evidence that the foal has been lost..... | 22 00    |
|                                                                     |       | 2d do.....                                                                | 14 00    |
|                                                                     |       | 3d do.....                                                                | 6 00     |
|                                                                     |       | 10. Best span of draught horses.....                                      | 20 00    |
|                                                                     |       | 2d do.....                                                                | 15 00    |
|                                                                     |       | 3d do.....                                                                | 10 00    |
|                                                                     |       | 11. Extra entries.....                                                    |          |

Horses shown as single carriage horses, as saddle horses, or as spans of team or carriage horses, must not be stallions.

No horse will be allowed to compete in more

than one class or section, except when competing for the prize for the best horse of any age in his class, or for the best of any age or blood.

CATTLE.

CLASS V.—DURHAMS.

|                                                                                                                  |          |
|------------------------------------------------------------------------------------------------------------------|----------|
| 1. Best bull 4 years old and upwards..                                                                           | \$36 00  |
| 2d do.....                                                                                                       | 24 00    |
| 3d do.....                                                                                                       | 16 00    |
| 4th do.....                                                                                                      | 8 00     |
| 2. Best 3 years old bull.....                                                                                    | 32 00    |
| 2d do.....                                                                                                       | 20 00    |
| 3d do.....                                                                                                       | 12 00    |
| 4th do.....                                                                                                      | 6 00     |
| 3. Best 2 years old bull.....                                                                                    | 24 00    |
| 2d do.....                                                                                                       | 16 00    |
| 3d do.....                                                                                                       | 9 00     |
| 4th do.....                                                                                                      | 5 00     |
| 4. Best one year old bull.....                                                                                   | 20 00    |
| 2d do.....                                                                                                       | 12 00    |
| 3d do.....                                                                                                       | 8 00     |
| 4th do.....                                                                                                      | 4 00     |
| 5. Best bull calf (under 1 year).....                                                                            | 16 00    |
| 2d do.....                                                                                                       | 10 00    |
| 3d do.....                                                                                                       | 6 00     |
| 4th do.....                                                                                                      | 3 00     |
| 6. Best bull of any age.....                                                                                     | Diploma. |
| 7. Best cow.....                                                                                                 | 20 00    |
| 2d do.....                                                                                                       | 12 00    |
| 3d do.....                                                                                                       | 8 00     |
| 4th do.....                                                                                                      | 4 00     |
| 8. Best 3 years old cow.....                                                                                     | 16 00    |
| 2d do.....                                                                                                       | 10 00    |
| 3d do.....                                                                                                       | 6 00     |
| 4th do.....                                                                                                      | 4 00     |
| 9. Best 2 years old heifer.....                                                                                  | 12 00    |
| 2d do.....                                                                                                       | 8 00     |
| 3d do.....                                                                                                       | 5 00     |
| 4th do.....                                                                                                      | 3 00     |
| 10. Best 1 year old heifer.....                                                                                  | 10 00    |
| 2d do.....                                                                                                       | 6 00     |
| 3d do.....                                                                                                       | 4 00     |
| 4th do.....                                                                                                      | 2 00     |
| 11. Best heifer calf (under one year)...                                                                         | 6 00     |
| 2d do.....                                                                                                       | 4 00     |
| 3d do.....                                                                                                       | 2 00     |
| 4th do.....                                                                                                      | 1 00     |
| 12. Best herd of Durhams, consisting of one bull, and five cows or heifers, or cows and heifers, of any age..... | 40 00    |
| 13. Extra Entries.                                                                                               |          |

N.B.—A certificate of HERD BOOK PEDIGREE, or a sufficient Reference to the Herd Book in which they are registered, will be required of all animals in the Durham class, along with or previous to the application to enter them for exhibition. The pedigrees of others should be as full and correct as possible.

CLASS VI.—DEVONS.

The list of Prizes the same as in Class V.

CLASS VII.—HEREFORDS.

Prizes the same as Class V.

CLASSES VIII.—AYRSHIRES.

Prizes the same as Class V.

CLASS IX.—GALLOWAY, AND POLLED ANGUS, OR ABERDEEN CATTLE.

Prizes the same as Class V.

CLASS X.—THE PRINCE OF WALES' PRIZE, AND PRIZES OPEN TO ALL BREEDS OF CATTLE.

| Sect.                                                                                              | \$ | c. |
|----------------------------------------------------------------------------------------------------|----|----|
| 1. Best Durham Bull of any age,—<br>Prize presented by His Royal<br>Highness the Prince of Wales.. | 60 | 00 |
| 2. For the best bul of any age or<br>breed, Diploma and Silver Medal.                              |    |    |
| 3. For the best Animal in the yard,<br>male or female, Diploma and<br>Silver Medal.                |    |    |

CLASS XI.—GRADE CATTLE.

| Sect.                                   | \$ | c. |
|-----------------------------------------|----|----|
| 1. Best Grade cow.....                  | 20 | 00 |
| 2d do.....                              | 12 | 00 |
| 3d do.....                              | 8  | 00 |
| 4th do.....                             | 5  | 00 |
| 2. Best 3 years old cow.....            | 16 | 00 |
| 2d do.....                              | 10 | 00 |
| 3d do.....                              | 6  | 00 |
| 4th do.....                             | 4  | 00 |
| 3. Best 2 years old heifer.....         | 12 | 00 |
| 2d do.....                              | 8  | 00 |
| 3d do.....                              | 5  | 00 |
| 4th do.....                             | 3  | 00 |
| 4. Best 1 year old heifer.....          | 10 | 00 |
| 2d do.....                              | 6  | 00 |
| 3d do.....                              | 4  | 00 |
| 4th do.....                             | 2  | 00 |
| 5. Best heifer calf (under 1 year)..... | 6  | 00 |
| 2d do.....                              | 4  | 00 |
| 3d do.....                              | 2  | 00 |
| 4th do.....                             | 1  | 00 |

THE FERGUS CUP.

6. Best grade heifer, not more than two years old on March 1, 1862, the produce of a pure bred Durham Bull, having a recorded pedigree, and of a cow of any breed, not more than one remove from thorough bred. Prize presented by Hon. A. Fergusson. SILVER Cup.
7. Extra Entries

DIPLOMAS will be awarded to the Breeders or Importers of bulls and stallions which take Frist Prizes, when their names and residences are given.

The Judges shall ascertain, in deciding on bull calves in any of the foregoing classes, whether the animal has been suckled or raised by pail, and make allowances accordingly—The exact age of young animals must be stated on the cards, and will be taken into consideration by the Judges in making their awards; and



any person understating the age of an animal will forfeit the premium to which he might otherwise be entitled.

A statement to be produced to show the breeding of animals in class XI.

Young cattle may compete if the exhibitor thinks fit in an older class than that to which they properly belong; but no animal will be allowed to compete in more than one of the foregoing sections, except for the Medals, or where all classes and ages compete together, or in the herds.

Cows in any of the above classes must be giving milk at the time of the exhibition, or be evidently well gone in calf.

An animal will not be allowed to compete as a three-year old cow unless she has had a calf, or is evidently in calf, but a two year old animal having had a calf will be allowed to compete as a two-year old heifer, if the owner thinks fit.

Prizes will be awarded to animals of other breeds than those above mentioned, if deemed worthy.

#### CLASS XII.—FAT AND WORKING CATTLE, ANY BREED.

| Sect.                                                                                                     | \$ | c. |
|-----------------------------------------------------------------------------------------------------------|----|----|
| 1. Best fat ox or steer.....                                                                              | 30 | 00 |
| 2d do.....                                                                                                | 20 | 00 |
| 3d do.....                                                                                                | 12 | 00 |
| 2. Best fat cow or heifer.....                                                                            | 30 | 00 |
| 2d do.....                                                                                                | 20 | 00 |
| 3d do.....                                                                                                | 12 | 00 |
| 3. Best yoke of working oxen.....                                                                         | 20 | 00 |
| 2d do.....                                                                                                | 12 | 00 |
| 3d do.....                                                                                                | 8  | 00 |
| 4. Best yoke 3 years old steers.....                                                                      | 16 | 00 |
| 2d do.....                                                                                                | 10 | 00 |
| 3d do.....                                                                                                | 6  | 00 |
| 5. Best team of oxen, not less than ten yoke from one township, the property of any number of persons.... | 40 | 00 |
| 6. Extra Entries.                                                                                         |    |    |

Fat Cattle and Fat Sheep can be exhibited only by persons who have owned and fed them at least six months previously.

#### SHEEP, LONG WOOLLED.

##### CLASS XIII.—LEICESTERS.

|                                         |    |    |
|-----------------------------------------|----|----|
| 1. Best ram, two shears and over.....   | 16 | 00 |
| 2d do.....                              | 10 | 00 |
| 3d do.....                              | 5  | 00 |
| 2. Best shearling ram.....              | 16 | 00 |
| 2d do.....                              | 10 | 00 |
| 3d do.....                              | 5  | 00 |
| 3. Best ram lamb.....                   | 8  | 00 |
| 2d do.....                              | 4  | 00 |
| 3d do.....                              | 2  | 00 |
| 4. Best 2 ewes, two shears and over ... | 16 | 00 |
| 2d do.....                              | 12 | 00 |
| 3d do.....                              | 6  | 00 |
| 5. Best 2 shearling ewes.....           | 12 | 00 |
| 2d do.....                              | 8  | 00 |
| 3d do.....                              | 4  | 00 |

|                          |     |    |
|--------------------------|-----|----|
| 6. Best 2 ewe lands..... | \$6 | 00 |
| 2d do.....               | 4   | 00 |
| 3d do.....               | 2   | 00 |

#### CROSS XIV.—COTSWOLDS.

Prizes the same as in Class XIII.

#### CLASS XV.—OTHER LONG WOOLLED SHEEP, NOT LEICESTERS, COTSWOLD, OR CHEVIOTS.

Prizes the same as in Class XIII.

#### SHEEP—MEDIUM WOOLLED.

##### CLASS XVI.—SOUTH DOWNS.

Prizes the same as in Class XIII.

##### CLASS XVII.—CHEVIOTS.

Prizes the same as in Class XIII.

#### CLASS XVIII.—OTHER MEDIUM WOOLLED SHEEP, NOT SOUTHDOWNS OR CHEVIOTS.

Prizes the same as in Class XIII.

#### SHEEP—FINE WOOLLED.

##### CLASS XIX.—MERINOS AND SAXONS.

Prizes the same as in Class XIII.

#### CLASS XX.—OTHER FINE WOOLLED SHEEP, NOT MERINOS OR SAXONS.

Prizes the same as in Class XIII.

##### CLASS XXI.—FAT SHEEP.

|                              |    |    |
|------------------------------|----|----|
| 1. Best two fat wethers..... | 12 | 00 |
| 2d do.....                   | 8  | 00 |
| 3d do.....                   | 4  | 00 |
| 2. Best 2 fat ewes.....      | 12 | 00 |
| 2d do.....                   | 8  | 00 |
| p do.....                    | 4  | 00 |
| 3. Extra entries in sheep.   |    |    |

Sheep that have been shown in any other classes cannot compete as fat sheep.

Sheep will not be allowed to compete in any class with more than the present season's growth of wool upon them.

If necessary to decide the merits of different sheep satisfactorily, the Judges shall have the power of causing them to be shorn upon the ground.

#### PIGS—LARGE BREEDS.

##### CLASS XXII.—YORKSHIRES.

|                                       |    |    |
|---------------------------------------|----|----|
| 1. Best Boar, 1 year and over.....    | 15 | 00 |
| 2d do.....                            | 10 | 00 |
| 3d do.....                            | 6  | 00 |
| 2. Best Boar, under 1 year.....       | 10 | 00 |
| 2d do.....                            | 6  | 00 |
| 3d do.....                            | 4  | 00 |
| 3. Best Breeding Sow 1 year and over. | 10 | 00 |
| 2d do.....                            | 7  | 00 |
| 3d do.....                            | 4  | 00 |

|                                    |        |
|------------------------------------|--------|
| 4. Best sow, under 1 year old..... | \$5 00 |
| 2d do.....                         | 4 00   |
| 3d do.....                         | 3 00   |

## CLASS XXIII.—LARGE BERKSHIRES.

Prizes the same as in Class XXII.

## CLASS XXIV.—ALL OTHER LARGE BREEDS.

Prizes the same as in Class XXII.

## PIGS—SMALL BREEDS.

## CLASS XV.—SUFFOLKS.

Prizes the same as in Class XXII.

## CLASS XXVI.—IMPROVED BERKSHIRES.

Prizes the same as in Class XXII.

## CLASS XXVII.—ALL OTHER SMALL BREEDS.

Prizes the same as in Class XXII.

In the classes of Pigs, the *precise age* of the animal is to be *stated on the cards*.

With a view of encouraging largely the importation of improved stock, the exhibitor of any male animal imported into this Province from Europe since the last Exhibition, which shall take the first prize in any of the above classes, will be paid three times the amount of the premium offered in the list; the exhibitor of any female animal imported from Europe within the same time, taking the first prize, will be paid double the amount offered; the exhibitor of any male animal imported into the Province from any part of America within the same time, taking the first prize, will be paid double the amount of prize offered; and of any female animal imported within the same time, and taking the first prize, one-half addition to the amount of prize offered in the list. Such animals to be the *bona fide* property of persons residing in Upper Canada. Satisfactory evidence must have been given at the time of making the entry that the animal has been imported within the time named, or the increased prize will not be paid.

## CLASS XXVIII.—POULTRY, &amp;c.

| Sect.                               | \$ c. |
|-------------------------------------|-------|
| 1. Best pair of white dorkings..... | 4 00  |
| 2d do.....                          | 2 00  |
| 2. Best pair of spangled do.....    | 4 00  |
| 2d do.....                          | 2 00  |
| 3. Best pair of black Polands.....  | 4 00  |
| 2d do.....                          | 2 00  |
| 4. Best pair of white Polands.....  | 4 00  |
| 2d do.....                          | 2 00  |
| 5. Best pair of golden Polands..... | 4 00  |
| 2d do.....                          | 2 00  |
| 6. Best pair of silver Polands..... | 4 00  |
| 2d do.....                          | 2 00  |
| 7. Best pair of game fowls.....     | 4 00  |
| 2d do.....                          | 2 00  |

|                                                                                     |        |
|-------------------------------------------------------------------------------------|--------|
| 8. Best pair of Jersey Blues.....                                                   | \$4 00 |
| 2d do.....                                                                          | 2 00   |
| 9. Best pair of Cochins China, Shanghai, Canton, or Braham Pootra fowls.....        | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 10. Best pair of black Spanish fowls.....                                           | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 11. Best pair of black Java fowls.....                                              | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 12. Best pair of Bolton bays.....                                                   | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 13. Best pair of Bolton grays.....                                                  | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 14. Best pair of Hamburg fowls.....                                                 | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 15. Best pair of Dominique.....                                                     | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 16. Best pair of feather-legged bantams.....                                        | 2 00   |
| 2d do.....                                                                          | 1 00   |
| 17. Best pair of smooth-legged bantams.....                                         | 2 00   |
| 2d do.....                                                                          | 1 00   |
| 18. Best pair of turkeys (white).....                                               | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 19. Best pair of turkeys, coloured.....                                             | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 20. Best pair of wild turkeys.....                                                  | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 21. Best pair of large geese.....                                                   | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 22. Best pair of Bremen geese.....                                                  | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 23. Best pair of Chinese geese.....                                                 | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 24. Best pair of Muscovy ducks.....                                                 | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 25. Best pair of common ducks.....                                                  | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 26. Best pair of Aylesbury ducks.....                                               | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 27. Best pair of Poland ducks.....                                                  | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 28. Best pair of Rouen ducks.....                                                   | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 29. Best pair of Guinea fowls.....                                                  | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 30. Best pair of pea fowls.....                                                     | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 31. Best collection of pigeons.....                                                 | 4 00   |
| 2d do.....                                                                          | 2 00   |
| 32. Best lot of poultry, in one pen, and owned by the exhibitor.....                | 6 00   |
| 33. Best collection of poultry entered in the various classes by one exhibitor..... | 8 00   |
| 34. Best pair of rabbits.....                                                       | 2 00   |
| 35. Best lot of rabbits.....                                                        | 4 00   |

## THE FERGUS MEDALS.

|                                                                                              |               |
|----------------------------------------------------------------------------------------------|---------------|
| 36. Best pair (Cock and Hen) of Domestic Fowls, any breed, prize by Hon. Adam Fergusson..... | Silver Medal. |
| 2d do.....                                                                                   | Silver Medal. |
| 37. Other entries.....                                                                       |               |

Exhibitors will have to provide their own coops, and are recommended to have them about three feet cube in size, for convenience of arrangement on the grounds.



## AGRICULTURAL PRODUCTIONS.

## CLASS XXIX—GRAINS, SEEDS, &amp;C.

1. The Canada Company's prize for the best 25 bushes of Fall Wheat, the produce of Canada West, being the growth of the year 1862. Each sample must be of one distinct variety, pure and unmixed, of the best quality for seed, and not to be tested merely by weight. The prize to be awarded to the actual grower only of the Wheat, which is to be given up to and become the property of the Association, for distribution to the County Societies for seed ..... \$100 00
- 2nd do by the Association 40 00
- 3rd do ..... 20 00

The winners of the 2nd and 3rd prizes to retain their wheat.

This wheat will be ready for distribution after the annual meeting. The delegates from such County Societies as desire to have a portion are requested to apply for it, and take it with them from the show ground, for immediate sowing, where practicable.

The winners of these prizes will be required to furnish the Secretary with a written statement of the nature of the soil, mode of preparation, the variety and quantity of seed, and time of sowing, manures, (if any used), produce per acre of grain, and any other particulars of practical importance, before being paid the amount of premium. Winners of prizes in the succeeding sections of this class will also be expected to furnish information when applied for

Persons competing for the Canada Company's prize are requested to bring a sample in the straw, pulled from the ground when ripe, with the roots remaining attached.

The Board reserves the right of purchasing part or the whole of first prize samples of grain and seeds at the market value.

2. Best two bushels of white winter wheat ..... 10 00
- 2nd do ..... 8 00
- 3rd do ..... 6 00
- 4th do ..... 4 00
3. Best two bushels of red winter wheat 10 00
- 2nd do ..... 8 00
- 3rd do ..... 6 00
- 4th do ..... 4 00
4. Best two bushels of white spring wheat ..... 10 00
- 2nd do ..... 8 00
- 3rd do ..... 6 00
- 4th do ..... 4 00
5. Best two bushels red spring wheat... 10 00
- 2nd do ..... 8 00
- 3rd do ..... 6 00
- 4th do ..... 4 00
6. Best 2 bushels of barley (two rowed. 6 00
- 2nd do ..... 4 00
- 3rd do ..... 2 00
- 4th do ..... Vol Transactions
7. Best two Bushels of barley (6 rowed) 6 00

- 2nd do ..... \$4 00
- 3rd do ..... 2 00
- 4th do ..... Trans.
8. Best two bushels rye ..... 6 00
- 2nd do ..... 4 00
- 3rd do ..... 2 00
- 4th do ..... Trans.
9. Best two bushels of oats (white) ..... 6 00
- 2nd do ..... 4 00
- 3rd do ..... 2 00
- 4th do ..... Trans.
10. Best two bushels of oats (black).... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
- 4th do ..... Trans.
11. Best two bushels of field peas ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
- 4th do ..... Trans.
12. Best two bus of marrowfat peas... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
- 4th do ..... Trans.
13. Best two bushels of tares ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
- 4th do ..... Trans.
14. Best bushel of white field beans... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
- 4th do ..... Trans.
15. Best two bushels Indian corn in the ear (white) ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
- 4th do ..... Trans.
16. Best two do (yellow) ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
- 4th do ..... Trans.
17. Best bushel of timothy seed ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
- 4th do ..... Trans.
18. Best bushel of clover seed ..... 6 00
- 2d do ..... 4 00
- 2d do ..... 2 00
19. Best bushel of Alsike clover seed... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
20. Best bushel of hemp seed ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
21. Best bushel of flax seed ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
22. Best bushel of mustard seed ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
23. Best Swedish turnip seed, from transplanted bulbs, not less than 20 lbs 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00
24. Best 14 lbs white Belgian field carrot seed ..... 6 00
- 2d do ..... 4 00
- 3d do ..... 2 00

|                                                       |        |                                                             |        |
|-------------------------------------------------------|--------|-------------------------------------------------------------|--------|
| 25. Best 12 lbs. long red mangel wurzel seed.....     | \$6 00 | 14. Best 12 roots mangel wurzel (long red).....             | \$3 00 |
| 2d do.....                                            | 4 00   | 2d do.....                                                  | 2 00   |
| 3d do.....                                            | 2 00   | 3d do.....                                                  | 1 00   |
| 26. Best 12 lbs. yellow globe mangel wurzel seed..... | 6 00   | 15. Best 12 roots red globe mangel wurzel.....              | 3 00   |
| 2d do.....                                            | 4 00   | 2d do.....                                                  | 2 00   |
| 3d do.....                                            | 2 00   | 3d do.....                                                  | Trans. |
| 27. Best bale of hops, not less than 112 pounds.....  | 20 00  | 16. Best 12 roots yellow globe mangel wurzel.....           | 3 00   |
| 2d do.....                                            | 12 00  | 2d do.....                                                  | 2 00   |
| 3d do.....                                            | 8 00   | 3d do.....                                                  | 1 00   |
| 28. Best bushel of horse or tick beans.....           | 6 00   | 17. Best 12 roots long yellow mangel wurzel.....            | 3 00   |
| 2d do.....                                            | 3 00   | 2d do.....                                                  | 2 00   |
| 3d do.....                                            | Trans. | 3d do.....                                                  | Trans. |
| 29. Best bushel of buckwheat.....                     | 4 00   | 18. Best 12 roots of khol rabi.....                         | 3 00   |
| 2d do.....                                            | 2 00   | 2d do.....                                                  | 2 00   |
| 3d do.....                                            | Trans. | 3d do.....                                                  | 1 00   |
| 30. Best bushel of Millet.....                        | 4 00   | 19. Best 12 roots of sugar beet.....                        | 3 00   |
| 2d do.....                                            | 2 00   | 2d do.....                                                  | 2 00   |
| 3d do.....                                            | Trans. | 3d do.....                                                  | 1 00   |
| 31. Best bushel of Hungarian grass seed.....          | 4 00   | 20. Best 20 roots parsnips.....                             | 3 00   |
| 2d do.....                                            | 2 00   | 2d do.....                                                  | 2 00   |
| 3d do.....                                            | Trans. | 3d do.....                                                  | Trans. |
| 32. Extra entries.....                                |        | 21. Best 20 roots of chicory.....                           | 3 00   |
|                                                       |        | 2d do.....                                                  | 2 00   |
|                                                       |        | 3d do.....                                                  | Trans. |
|                                                       |        | 22. Best 12 large squashes for cattle.....                  | 3 00   |
|                                                       |        | 2d do.....                                                  | 2 00   |
|                                                       |        | 3d do.....                                                  | 1 00   |
|                                                       |        | 23. Best 2 mammoth field pumpkins.....                      | 3 00   |
|                                                       |        | 2d do.....                                                  | 2 00   |
|                                                       |        | 3d do.....                                                  | Trans. |
|                                                       |        | 24. Best 4 common yellow field do.....                      | 3 00   |
|                                                       |        | 2d do.....                                                  | 2 00   |
|                                                       |        | 3d do.....                                                  | Trans. |
|                                                       |        | 25. Best 20 lbs of tobacco leaf, growth of Canada West..... | 3 00   |
|                                                       |        | 2d do.....                                                  | 2 00   |
|                                                       |        | 3d do.....                                                  | Trans. |
|                                                       |        | 26. Best broom corn brush, 28 lbs.....                      | 3 00   |
|                                                       |        | 2d do.....                                                  | 2 00   |
|                                                       |        | 3d do.....                                                  | Trans. |

## CLASS XXX.—ROOTS AND OTHER FIELD CROPS.

|                                                                       |        |                                                                                                                                      |        |
|-----------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. Best bushel of pink-eyed potatoes.....                             | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | 1 00   |                                                                                                                                      |        |
| 2. Best bushel cup potatoes.....                                      | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | 1 00   |                                                                                                                                      |        |
| 3. Best bushel garnet Chilis.....                                     | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | 1 00   |                                                                                                                                      |        |
| 4. Best bushel white potatoes.....                                    | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | Trans. |                                                                                                                                      |        |
| 5. Best bushel red do.....                                            | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | Trans. |                                                                                                                                      |        |
| 6. Best bushel blue.....                                              | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | Trans. |                                                                                                                                      |        |
| 7. Best bushel of any other sort.....                                 | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | Trans. |                                                                                                                                      |        |
| 8. Best collection of Field Potatoes, a peck of each sort, named..... | 4 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 3 00   |                                                                                                                                      |        |
| 3d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 9. Best bushel Swede turnips.....                                     | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | 1 00   |                                                                                                                                      |        |
| 10. Best bushel white globe turnips.....                              | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | Trans. |                                                                                                                                      |        |
| 11. Best bushel Aberdeen yellow turnips.....                          | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | Trans. |                                                                                                                                      |        |
| 12. Best 20 roots red carrots.....                                    | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | 1 00   |                                                                                                                                      |        |
| 13. Best 20 roots white or Belgian carrots.....                       | 3 00   |                                                                                                                                      |        |
| 2d do.....                                                            | 2 00   |                                                                                                                                      |        |
| 3d do.....                                                            | 1 00   |                                                                                                                                      |        |
|                                                                       |        | 14. Best 12 roots mangel wurzel (long red).....                                                                                      | \$3 00 |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | 1 00   |
|                                                                       |        | 15. Best 12 roots red globe mangel wurzel.....                                                                                       | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | Trans. |
|                                                                       |        | 16. Best 12 roots yellow globe mangel wurzel.....                                                                                    | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | 1 00   |
|                                                                       |        | 17. Best 12 roots long yellow mangel wurzel.....                                                                                     | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | Trans. |
|                                                                       |        | 18. Best 12 roots of khol rabi.....                                                                                                  | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | 1 00   |
|                                                                       |        | 19. Best 12 roots of sugar beet.....                                                                                                 | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | 1 00   |
|                                                                       |        | 20. Best 20 roots parsnips.....                                                                                                      | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | Trans. |
|                                                                       |        | 21. Best 20 roots of chicory.....                                                                                                    | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | Trans. |
|                                                                       |        | 22. Best 12 large squashes for cattle.....                                                                                           | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | 1 00   |
|                                                                       |        | 23. Best 2 mammoth field pumpkins.....                                                                                               | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | Trans. |
|                                                                       |        | 24. Best 4 common yellow field do.....                                                                                               | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | Trans. |
|                                                                       |        | 25. Best 20 lbs of tobacco leaf, growth of Canada West.....                                                                          | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | Trans. |
|                                                                       |        | 26. Best broom corn brush, 28 lbs.....                                                                                               | 3 00   |
|                                                                       |        | 2d do.....                                                                                                                           | 2 00   |
|                                                                       |        | 3d do.....                                                                                                                           | Trans. |
|                                                                       |        | <i>The Canada Company's Prize for Flax.</i>                                                                                          |        |
|                                                                       |        | 27. Best 112 lbs of flax, scutched.....                                                                                              | 24 00  |
|                                                                       |        | 2d do by the Association.....                                                                                                        | 16 00  |
|                                                                       |        | 3d do.....                                                                                                                           | 8 00   |
|                                                                       |        | <i>The Canada Company's Prize for Hemp.</i>                                                                                          |        |
|                                                                       |        | 28. Best 112 lbs of Hemp.....                                                                                                        | 16 00  |
|                                                                       |        | 2d do by the Association.....                                                                                                        | 12 00  |
|                                                                       |        | 3d do.....                                                                                                                           | 6 00   |
|                                                                       |        | 29. Other entries                                                                                                                    |        |
|                                                                       |        | [The roots in the above class to be certified as of field culture by the Exhibitor]                                                  |        |
|                                                                       |        | Roots of other varieties than those above named will receive prizes if worthy                                                        |        |
|                                                                       |        | The names of the different varieties of wheat or other grain, roots, &c., must be inserted by each exhibitor in his list of entries. |        |

## HORTICULTURAL PRODUCTS.

## CLASS XXXI.—FRUIT.

| Sect.                                                     |  | \$ c. |
|-----------------------------------------------------------|--|-------|
| 1. Best 20 varieties of apples, named, [six of each]..... |  | 6 00  |
| 2d do.....                                                |  | 5 00  |
| 3d do.....                                                |  | 4 00  |



|                                                                  |        |                                                                                                                              |        |
|------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------|--------|
| 2. Best 12 table apples, named, fall sort                        | \$4 00 | 21. Best collection of grapes, grown in open air, 2 clusters of each sort, named                                             | \$4 00 |
| 2d do                                                            | 3 00   | 2d do                                                                                                                        | 3 00   |
| 3d do                                                            | 2 00   | 3d do                                                                                                                        | 2 00   |
| 3. Best 12 table apples, named, (winter sort)                    | 4 00   | 22. Best 3 bottles wine, made from the grape                                                                                 | 3 00   |
| 2d do                                                            | 3 00   | 2d do                                                                                                                        | 2 00   |
| 3d do                                                            | 2 00   | 3d do                                                                                                                        | 1 00   |
| 4. Best 12 baking apples, named, (fall)                          | 4 00   | 23. Best green flesh melon                                                                                                   | 2 00   |
| 2d do                                                            | 3 00   | 2d do                                                                                                                        | 1 50   |
| 3d do                                                            | 2 00   | 3d do                                                                                                                        | 1 00   |
| 5. Best 12 baking apples, (winter)                               | 4 00   | 24. Best red or scarlet flesh melon                                                                                          | 2 00   |
| 2d do                                                            | 3 00   | 2d do                                                                                                                        | 1 50   |
| 3d do                                                            | 2 00   | 3d do                                                                                                                        | 1 00   |
| 6. Best 20 varieties of pears, named, (three of each)            | 6 00   | 25. Best water melon                                                                                                         | 2 00   |
| 2d do                                                            | 5 00   | 2d do                                                                                                                        | 1 50   |
| 3d do                                                            | 4 00   | 3d do                                                                                                                        | 1 00   |
| 7. Best 12 table pears, named, (fall sort)                       | 4 00   | 26. Best 6 citrons for preserving                                                                                            | 2 00   |
| 2d do                                                            | 3 00   | 2d do                                                                                                                        | 1 50   |
| 3d do                                                            | 2 00   | 3d do                                                                                                                        | Trans. |
| 8. Best 12 table pears, named, [winter sort]                     | 4 00   | 27. Best 6 nectarines                                                                                                        | 2 00   |
| 2d do                                                            | 3 00   | 2d do                                                                                                                        | 1 50   |
| 3d do                                                            | 2 00   | 3d do                                                                                                                        | 1 00   |
| 9. Best 12 plums, [dessert]                                      | 3 00   | 28. Best display of fruit, the growth of exhibitor, [distinct from other entries] not more than three specimens of each sort | 9 00   |
| 2d do                                                            | 2 00   | 2d do                                                                                                                        | 6 00   |
| 3d do                                                            | 1 00   | 2d do                                                                                                                        | 3 00   |
| 10. Best 12 baking plums, named                                  | 3 00   | 29. Extra entries.                                                                                                           |        |
| 2d do                                                            | 2 00   |                                                                                                                              |        |
| 3d do                                                            | 1 00   |                                                                                                                              |        |
| 11. Best quart of Damsons [English]                              | 3 00   |                                                                                                                              |        |
| 2d do                                                            | 2 00   |                                                                                                                              |        |
| 3d do                                                            | 1 00   |                                                                                                                              |        |
| 12. Best 12 peaches grown in open air, named                     | 3 00   |                                                                                                                              |        |
| 2d do                                                            | 2 00   |                                                                                                                              |        |
| 3d do                                                            | 1 00   |                                                                                                                              |        |
| 13. Best 10 varieties of peaches, grown in open air, [3 of each] | 4 00   |                                                                                                                              |        |
| 2d do                                                            | 3 00   |                                                                                                                              |        |
| 3d do                                                            | 2 00   |                                                                                                                              |        |
| 14. Best 12 quinces                                              | 2 00   |                                                                                                                              |        |
| 2d do                                                            | 1 50   |                                                                                                                              |        |
| 3d do                                                            | Trans. |                                                                                                                              |        |
| 15. Best 3 bunches of golden or white grapes grown under glass   | 4 00   |                                                                                                                              |        |
| 2d do                                                            | 3 00   |                                                                                                                              |        |
| 3d do                                                            | 2 00   |                                                                                                                              |        |
| 16. Best 3 clusters of black grapes grown under glass            | 4 00   |                                                                                                                              |        |
| 2d do                                                            | 3 00   |                                                                                                                              |        |
| 3d do                                                            | 2 00   |                                                                                                                              |        |
| 17. Best four clusters black grapes, grown in open air           | 3 00   |                                                                                                                              |        |
| 2d do                                                            | 2 00   |                                                                                                                              |        |
| 3d do                                                            | 1 00   |                                                                                                                              |        |
| 18. Best 4 clusters white grapes, grown in open air              | 3 00   |                                                                                                                              |        |
| 2d do                                                            | 2 00   |                                                                                                                              |        |
| 3d do                                                            | 1 00   |                                                                                                                              |        |
| 19. Best and heaviest 2 clusters grapes grown under glass        | 4 00   |                                                                                                                              |        |
| 2d do                                                            | 3 00   |                                                                                                                              |        |
| 3d do                                                            | 2 00   |                                                                                                                              |        |
| 20. Best and heaviest two bunches of grapes, [open air]          | 3 00   |                                                                                                                              |        |
| 2d do                                                            | 2 00   |                                                                                                                              |        |
| 3d do                                                            | 1 00   |                                                                                                                              |        |

## CLASS XXXII.—GARDEN VEGETABLES.

|                                                                 |      |
|-----------------------------------------------------------------|------|
| 1. Best 12 roots of salsify                                     | 2 00 |
| 2d do                                                           | 1 50 |
| 3d do                                                           | 1 00 |
| 29. Best 3 heads brocoli                                        | 2 00 |
| 2d do                                                           | 1 50 |
| 3d do                                                           | 1 00 |
| 3. Best 3 heads cauliflower                                     | 2 00 |
| 2nd do                                                          | 1 50 |
| 3rd do                                                          | 1 00 |
| 4. Best 3 heads cabbage (summer)                                | 2 00 |
| 2nd do                                                          | 1 50 |
| 3rd do                                                          | 1 00 |
| 5. Best 3 heads cabbage (winter)                                | 2 00 |
| 2nd do                                                          | 1 50 |
| 3rd do                                                          | 1 00 |
| 6. Best 4 sorts winter cabbage, including savoy, 1 of each sort | 3 00 |
| 2nd do                                                          | 2 00 |
| 3rd do                                                          | 1 00 |
| 7. Best 3 heads red cabbage                                     | 2 00 |
| 2nd do                                                          | 1 50 |
| 3rd do                                                          | 1 00 |
| 8. Best 12 carrots for table, long red                          | 2 00 |
| 2nd do                                                          | 1 50 |
| 3rd do                                                          | 1 00 |
| 9. Best 12 early horn carrots                                   | 2 00 |
| 2nd do                                                          | 1 50 |
| 3rd do                                                          | 1 00 |
| 10. Best 12 table parsnips                                      | 2 00 |
| 2nd do                                                          | 1 50 |
| 3rd do                                                          | 1 00 |
| 11. Best 6 roots of white celery                                | 2 00 |
| 2nd do                                                          | 1 50 |
| 3rd do                                                          | 1 00 |

|                                                                                                          |        |                                                                                                                                               |        |
|----------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 12. Best 6 roots of red celery.....                                                                      | \$2 00 | 4. Best hand Bouquet .....                                                                                                                    | \$2 00 |
| 2nd do .....                                                                                             | 1 50   | 2nd do .....                                                                                                                                  | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 1 00   |
| 13. Best dozen capsicums (ripe) .....                                                                    | 2 00   | 5. Best collection of green-house plants,<br>not less than 12 specimens in<br>flowers .....                                                   | 10 00  |
| 2nd do .....                                                                                             | 1 50   | 2nd do .....                                                                                                                                  | 6 00   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 4 00   |
| 14. Best collection of capsicums (ripe)<br>6 of each sort.....                                           | 3 00   | 6. Best 12 pansies .....                                                                                                                      | 2 00   |
| 2nd do .....                                                                                             | 2 00   | 2nd do .....                                                                                                                                  | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 1 00   |
| 15. Best 3 egg plant fruit, purple .....                                                                 | 2 00   | 7. Best 6 fuchsias, in flower.....                                                                                                            | 4 00   |
| 2nd do .....                                                                                             | 1 50   | 2nd do .....                                                                                                                                  | 3 00   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 2 00   |
| 16. Best 12 tomatoes, (red).....                                                                         | 2 00   | 8. Best collection of annuals in bloom                                                                                                        | 2 00   |
| 2nd do .....                                                                                             | 1 50   | 2nd do .....                                                                                                                                  | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 1 00   |
| 17. Best 12 tomatoes, (yellow) .....                                                                     | 2 00   | 9. Best 6 cockscombs.....                                                                                                                     | 2 00   |
| 2nd do .....                                                                                             | 1 50   | 2nd do .....                                                                                                                                  | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 1 00   |
| 18. Best assorted collection of tomatoes,<br>6 each of large sorts, and 12 each<br>of small sorts.....   | 3 00   | 10. Best 6 balsams in bloom.....                                                                                                              | 2 00   |
| 2nd do .....                                                                                             | 2 00   | 2nd do .....                                                                                                                                  | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 1 00   |
| 19. Best 12 blood beets, long, .....                                                                     | 2 50   | 11. Best collection of asters .....                                                                                                           | 2 00   |
| 2nd do .....                                                                                             | 1 00   | 2nd do .....                                                                                                                                  | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 1 00   |
| 20. Best peck of white onions.....                                                                       | 2 00   | 12. Best collection of 10 weeks' stock...                                                                                                     | 2 00   |
| 2nd do .....                                                                                             | 1 50   | 2nd do .....                                                                                                                                  | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 1 00   |
| 21. Best peck of yellow onions.....                                                                      | 2 00   | 13. Best collection of hybrid perpetual<br>roses, not less than 12 blooms...                                                                  | 3 00   |
| 2nd do .....                                                                                             | 1 50   | 2nd do .....                                                                                                                                  | 2 00   |
| 3rd do .....                                                                                             | 1 00   | 3rd do .....                                                                                                                                  | 2 00   |
| 22. Best peck of red onions .....                                                                        | 2 00   | 14. Best floral ornament or design .....                                                                                                      | 5 00   |
| 2nd do .....                                                                                             | 1 50   | 2d do .....                                                                                                                                   | 4 00   |
| 3rd do .....                                                                                             | 1 00   | 3d do .....                                                                                                                                   | 3 00   |
| 23. Best 12 white turnips (table) .....                                                                  | 2 00   | 15. Best collection of verbenas, not less<br>than 12 varieties .....                                                                          | 3 00   |
| 2nd do .....                                                                                             | 1 50   | 2d do .....                                                                                                                                   | 2 00   |
| 3rd do .....                                                                                             | 1 00   | 3d do .....                                                                                                                                   | 1 00   |
| 24. Best 12 yellow turnips, (table).....                                                                 | 2 00   | 16. Best 6 petunias .....                                                                                                                     | 2 00   |
| 2nd do .....                                                                                             | 1 50   | 2d do .....                                                                                                                                   | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3d do .....                                                                                                                                   | 1 00   |
| 25. Best 12 ears sweet corn .....                                                                        | 2 00   | 17. Best collection perennial phloxes ...                                                                                                     | 2 00   |
| 2nd do .....                                                                                             | 1 50   | 2d do .....                                                                                                                                   | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3d do .....                                                                                                                                   | 1 00   |
| 26. Best and greatest variety of potatoes,<br>half peck of each sort, named .....                        | 3 00   | 18. Best 6 hardy shrubs, spikes in flower                                                                                                     | 2 00   |
| 2nd do .....                                                                                             | 2 00   | 2d do .....                                                                                                                                   | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3d do .....                                                                                                                                   | 1 00   |
| 27. Best 3 squashes, (table) .....                                                                       | 2 00   | 19. Best collection of hollyhocks .....                                                                                                       | 2 00   |
| 2nd do .....                                                                                             | 1 50   | 2d do .....                                                                                                                                   | 1 50   |
| 3rd do .....                                                                                             | 1 00   | 3d do .....                                                                                                                                   | 1 00   |
| 28. Best and greatest variety of vegeta-<br>bles, (distinct from other entries)<br>each kind named ..... | 4 00   | 20. Best display of plants in flower, dis-<br>tinct from other entries .....                                                                  | 10 00  |
| 2nd do .....                                                                                             | 3 00   | 2d do .....                                                                                                                                   | 6 00   |
| 3rd do .....                                                                                             | 2 00   | 3d do .....                                                                                                                                   | 4 00   |
| 29. Extra entries.                                                                                       |        | 21. Best collection of native plants dried<br>and named.....                                                                                  | 5 00   |
|                                                                                                          |        | 2d do .....                                                                                                                                   | 3 00   |
|                                                                                                          |        | 3d do .....                                                                                                                                   | 2 00   |
| CLASS XXXIII.—PLANTS AND FLOWERS.                                                                        |        |                                                                                                                                               |        |
| 1. Best dozen dahlias, named.....                                                                        | 2 00   | 22. Best specimen of useful and orna-<br>mental rustic work for the garden..                                                                  | 4 00   |
| 2nd do .....                                                                                             | 1 50   | 2d do .....                                                                                                                                   | 3 00   |
| 3rd do .....                                                                                             | 1 00   | 3d do .....                                                                                                                                   | 2 00   |
| 2. Best and largest collection of dahlias                                                                | 5 00   | 23. Extra entries.                                                                                                                            |        |
| 2nd do .....                                                                                             | 4 00   | Competitors in classes 30, 31, and 32, are re-<br>quested to deliver their various productions<br>in a clean and proper state for exhibition. |        |
| 3rd do .....                                                                                             | 3 00   |                                                                                                                                               |        |
| 3. Best bouquet of cut flowers (for table)                                                               | 2 00   |                                                                                                                                               |        |
| 2nd do .....                                                                                             | 1 50   |                                                                                                                                               |        |
| 3rd do .....                                                                                             | 1 00   |                                                                                                                                               |        |



## CLASS XXXIV.—DAIRY PRODUCTS, &amp;c.

|                                                                         |         |
|-------------------------------------------------------------------------|---------|
| 1. Best firkin of butter, in shipping order, not less than 56 lbs ..... | \$12 00 |
| 2d do .....                                                             | 10 00   |
| 3d do .....                                                             | 8 00    |
| 4th do .....                                                            | 6 00    |
| 2. Best butter, not less than 28 lbs, in firkins, crocks, or tubs ..... | 8 00    |
| 2d do .....                                                             | 6 00    |
| 3d do .....                                                             | 4 00    |
| 4th do .....                                                            | 2 00    |
| 3. Best cheese, not less than 30 lbs.....                               | 16 00   |
| 2d do .....                                                             | 8 00    |
| 3d do .....                                                             | 6 00    |
| 4th do .....                                                            | 4 00    |
| 4. Best two stilton cheese, not less than 14 lbs each .....             | 10 00   |
| 2d do .....                                                             | 8 00    |
| 3d do .....                                                             | 6 00    |
| 4th do .....                                                            | 4 00    |
| 5. Best honey, in the comb, not less than 10 lbs .....                  | 3 00    |
| 2d do .....                                                             | 2 00    |
| 3d do .....                                                             | 1 50    |
| 4th do .....                                                            | Trans   |
| 6. Best jar of clear honey .....                                        | 4 00    |
| 2d do .....                                                             | 2 00    |
| 3d do .....                                                             | 1 50    |
| 4th do .....                                                            | Trans.  |
| 7. Best 30 lbs. maple sugar.....                                        | 3 00    |
| 2d do .....                                                             | 2 00    |
| 3d do .....                                                             | 1 00    |
| 8. Best side of cured bacon.....                                        | 3 00    |
| 2d do .....                                                             | 2 00    |
| 3d do .....                                                             | 1 00    |
| 9. Best ham, cured .....                                                | 3 00    |
| 2d do .....                                                             | 2 00    |
| 3d do .....                                                             | 1 00    |
| 10. Extra Entries.                                                      |         |

Persons taking premiums on dairy products will be required to furnish statements of the mode of manufactures including the breed and number of cows, size of farm, description of dairy premises, treatment of milk, salt used, quantity of produce, and any other practical information that they may be able afford, before being paid the amount of premium.

CLASS XXXV.—AGRICULTURAL IMPLEMENTS,  
WORKED BY HORSE OR OTHER POWER.

| Sec.                                                                                                                                                                                    | \$ c. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1. Best iron plough, diploma and.....                                                                                                                                                   | 12 00 |
| 2d do .....                                                                                                                                                                             | 8 00  |
| 3d do .....                                                                                                                                                                             | 4 00  |
| 2. Best wooden plough, diploma and....                                                                                                                                                  | 12 00 |
| 2d do .....                                                                                                                                                                             | 8 00  |
| 3d do .....                                                                                                                                                                             | 4 00  |
| [The ploughs to be tested in the field, on the Tuesday, by a Committee appointed for the purpose, at the Exhibition; ease of draught, efficiency of work, and price, to be considered.] |       |
| 3. Best subsoil plough, diploma and....                                                                                                                                                 | 2 00  |
| 2d do .....                                                                                                                                                                             | 8 00  |
| 3d do .....                                                                                                                                                                             | 4 00  |
| 4. Best double shear trench plough.....                                                                                                                                                 | 4 00  |
| 2d do .....                                                                                                                                                                             | 6 00  |
| 3d do .....                                                                                                                                                                             | 4 00  |

|                                                              |         |
|--------------------------------------------------------------|---------|
| 5. Best double mould plough.....                             | \$10 00 |
| 2d do .....                                                  | 6 00    |
| 3d do .....                                                  | 4 00    |
| 6. Best pair of harrows.....                                 | 6 00    |
| 2d do .....                                                  | 4 00    |
| 3d do .....                                                  | 2 00    |
| 7. Best horse-power thresher and separator, diploma and..... | 20 00   |
| 2d do .....                                                  | 12 00   |
| 3d do .....                                                  | 8 00    |
| 8. Best grain drill, diploma and.....                        | 12 00   |
| 2d do .....                                                  | 8 00    |
| 3d do .....                                                  | 4 00    |
| 9. Best straw cutter.....                                    | 5 00    |
| 2d do .....                                                  | 4 00    |
| 3d do .....                                                  | 3 00    |
| 10. Best smut machine.....                                   | 6 00    |
| 2d do .....                                                  | 3 00    |
| 11. Best portable grist mill... ..                           | 12 00   |
| 2d do .....                                                  | 8 00    |
| 3d do .....                                                  | 4 00    |
| 12. Best grain cracker.....                                  | 8 00    |
| 2d do .....                                                  | 6 00    |
| 3d do .....                                                  | 4 00    |
| 13. Best corn and cob crusher.....                           | 4 00    |
| 2d do .....                                                  | 3 00    |
| 3d do .....                                                  | 2 00    |
| 14. Best clover cleaning machine.....                        | 12 00   |
| 2d do .....                                                  | 8 00    |
| 3d do .....                                                  | 4 00    |
| 15. Best cider mill and press.....                           | 12 00   |
| 2d do .....                                                  | 8 00    |
| 16. Best two-horse waggon.....                               | 12 00   |
| 2d do .....                                                  | 8 00    |
| 3d do .....                                                  | 4 00    |
| 17. Best one-horse light market waggon.                      | 10 00   |
| 2d do .....                                                  | 7 00    |
| 3d do .....                                                  | 3 00    |
| 18. Best horse cart.....                                     | 6 00    |
| 2d do .....                                                  | 4 00    |
| 3d do .....                                                  | 2 00    |
| 19. Best farm sleigh.....                                    | 8 00    |
| 2d do .....                                                  | 4 00    |
| 3d do .....                                                  | 2 00    |
| 20. Best horse rake.....                                     | 4 00    |
| 2d do .....                                                  | 3 00    |
| 3d do .....                                                  | 2 00    |
| 21. Best metal roller.....                                   | 11 00   |
| 2d do .....                                                  | 8 00    |
| 22. Best wooden roller.....                                  | 10 00   |
| 2d do .....                                                  | 5 00    |
| 23. Best stump extractor.....                                | 8 00    |
| 2d do .....                                                  | 4 00    |
| 24. Best reaping machine, diploma and.                       | 20 00   |
| 2d do .....                                                  | 12 00   |
| 3d do .....                                                  | 8 00    |
| 25. Best mowing machine, diploma and.                        | 20 00   |
| 2d do .....                                                  | 12 00   |
| 3d do .....                                                  | 8 00    |
| 26. Best combined mower and reaper, diploma and.....         | 20 00   |
| 2d do .....                                                  | 12 00   |
| 3d do .....                                                  | 8 00    |
| 27. Best potato digger.....                                  | 3 00    |
| 2d do .....                                                  | 2 00    |
| 3d do .....                                                  | Trans.  |
| 28. Best field or two-horse cultivator....                   | 12 00   |
| 2d do .....                                                  | 8 00    |
| 3d do .....                                                  | 4 00    |

|                                                                                                                                                  |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 29. Best horse hoe, single horse cultivator                                                                                                      | 34 00  |
| 2d do                                                                                                                                            | 3 00   |
| 30. Best post hole borer                                                                                                                         | 12 00  |
| 2d do                                                                                                                                            | 8 00   |
| 31. Best brick making machine                                                                                                                    | 10 00  |
| 2d do                                                                                                                                            | 6 00   |
| 32. Best flax dressing machine                                                                                                                   | 30 00  |
| 2d do                                                                                                                                            | 20 00  |
| 3d do                                                                                                                                            | 10 00  |
| 33. Best machine for sinking field drains<br>and laying in and covering tiles                                                                    | 60 00  |
| 2d do                                                                                                                                            | 40 00  |
| 34. Best portable steam engine, for agricul-<br>tural purposes, 6 to 10 horse power                                                              | 50 00  |
| 2d do                                                                                                                                            | 30 00  |
| 3d do                                                                                                                                            | 20 00  |
| 35. Best steam plough or cultivator, in<br>operation on the ground, (open to<br>foreign competition)                                             | 100 00 |
| 36. Best improved liquid manure drill,<br>for drilling two or more rows of<br>liquid, with turnips, mangels, &c.,<br>either on the ridge or flat | 25 00  |
| 2d do                                                                                                                                            | 15 00  |
| 37. Extras.                                                                                                                                      |        |

CLASS XXXVI.—AGRICULTURAL TOOLS AND IMPLE-  
MENTS, CHIEFLY FOR HAND USE.

|                                                                                  |        |
|----------------------------------------------------------------------------------|--------|
| 1. Best fanning mill, diploma and                                                | 6 00   |
| 2d do                                                                            | 4 00   |
| 3d do                                                                            | 2 00   |
| 2. Best seed drill, or barrow                                                    | 4 00   |
| 2d do                                                                            | 3 00   |
| 3d do                                                                            | 2 00   |
| 3. Best straw cutter                                                             | 5 00   |
| 2d do                                                                            | 4 00   |
| 3d do                                                                            | 3 00   |
| 4. Best machine for cutting roots for<br>stock                                   | 6 00   |
| 2d do                                                                            | 4 00   |
| 3d do                                                                            | 2 00   |
| 5. Best cheese-press                                                             | 8 00   |
| 2d do                                                                            | 6 00   |
| 6. Best churn                                                                    | 3 00   |
| 2d do                                                                            | 2 00   |
| 7. Best garden, walk, or lawn roller                                             | 4 00   |
| 2d do                                                                            | 2 00   |
| 3d do                                                                            | 1 00   |
| 8. Best thistle extractor                                                        | 2 00   |
| 2d do                                                                            | 1 00   |
| 3d do                                                                            | Trans. |
| 9. Best farm gate                                                                | 3 00   |
| 2d do                                                                            | 2 00   |
| 3d do                                                                            | Trans. |
| 10. Best specimen farm fence, of wood                                            | 3 00   |
| 2d do                                                                            | 2 00   |
| 3d do                                                                            | Trans. |
| 11. Best specimen wire fencing, not less<br>than two rods, erected on the ground | 8 00   |
| 2d do                                                                            | 6 00   |
| 3d do                                                                            | 4 00   |
| 12. Best wooden pump                                                             | 4 00   |
| 2d do                                                                            | 3 00   |
| 3d do                                                                            | 2 00   |
| 13. Best half-dozen hay rakes                                                    | 3 00   |
| 2d do                                                                            | 2 00   |
| 3d do                                                                            | 1 00   |
| 14. Best half-dozen manure forks                                                 | 3 00   |
| 2d do                                                                            | 2 00   |
| 3d do                                                                            | 1 00   |

|                                                                                                                 |        |
|-----------------------------------------------------------------------------------------------------------------|--------|
| 15. Best half-dozen hay forks                                                                                   | \$4 00 |
| 2d do                                                                                                           | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 16. Best half-dozen scythe snaths                                                                               | 3 00   |
| 2d do                                                                                                           | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 17. Best ox-yoke and bows                                                                                       | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 3d do                                                                                                           | Trans. |
| 18. Best grain cradle                                                                                           | 2 00   |
| 2d do                                                                                                           | 1 00   |
| 19. Best half-dozen grain shovels                                                                               | 3 00   |
| 2d do                                                                                                           | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 20. Best half-dozen iron [flat] shovels                                                                         | 3 00   |
| 2d do                                                                                                           | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 21. Best half-dozen spades                                                                                      | 3 00   |
| 2d do                                                                                                           | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 22. Best half-dozen steel hoes                                                                                  | 3 00   |
| 2d do                                                                                                           | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 23. Best half-dozen grass scythes                                                                               | 3 00   |
| 2d do                                                                                                           | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 24. Best half-dozen cradle scythes                                                                              | 3 00   |
| 2d do                                                                                                           | 2 00   |
| 3d do                                                                                                           | 1 00   |
| 25. Best machine for making drain tiles,<br>diploma and                                                         | 30 00  |
| 2d do                                                                                                           | 20 00  |
| 26. Best set of draining tools                                                                                  | 6 00   |
| 2d do                                                                                                           | 4 00   |
| 3d do                                                                                                           | 2 00   |
| 27. Best assortment of drain tiles                                                                              | 6 00   |
| 2d do                                                                                                           | 4 00   |
| 3d do                                                                                                           | 2 00   |
| 28. Best straw fork, wood                                                                                       | 2 00   |
| 2d do                                                                                                           | 1 00   |
| 3d do                                                                                                           | Trans. |
| 29. Best implement or machine for cut-<br>ting pullins, or other wise harvest-<br>ing peas, hand or horse power | 10 00  |
| 2d do                                                                                                           | 5 00   |
| 30. Best 6 chopping axes                                                                                        | 3 00   |
| 2d do                                                                                                           | 2 00   |
| 31. Best Set horse shoes                                                                                        | 2 00   |
| 2d do                                                                                                           | 1 00   |
| 32. Extra entries.                                                                                              |        |

CLASS XXXVII.—CATTLE FOOD—MANURES, AND  
MISCELLANEOUS.

|                                           |      |
|-------------------------------------------|------|
| 1. Best specimen oil cake                 | 4 00 |
| 2d do                                     | 2 00 |
| 3d do                                     | 2 00 |
| 2. Best specimen prepared food for cattle | 4 00 |
| 2d do                                     | 2 00 |
| 3d do                                     | 2 00 |
| 3. Best specimen ground bones, manure     | 4 00 |
| 2d do                                     | 2 00 |
| 4. Best specimen other artificial manure  | 4 00 |
| 2d do                                     | 2 00 |
| 5. Extra Entries                          |      |

ARTS & MANUFACTURES DEPARTMENT.

[Competition open to Canadian Exhibitors only.]

CLASS XXXVIII.—CABINET WARE AND OTHER  
WOOD MANUFACTURES.

|                                    |       |
|------------------------------------|-------|
| Sect. Cabinet Ware.                | \$ c  |
| 1. Best Bed Room Furniture, set of | 10 00 |
| 2d do                              | 8 00  |



|                                             |        |
|---------------------------------------------|--------|
| 2. Best Centre Table .....                  | \$7 00 |
| 2nd do .....                                | 5 00   |
| 3. Best Drawing Room Sofa .....             | 7 00   |
| 2nd do .....                                | 5 00   |
| 4. Best Drawing Room Chairs, set of .....   | 7 00   |
| 2nd do .....                                | 5 00   |
| 5. Best Dining Room Furniture, set of ..... | 8 00   |
| 2nd do .....                                | 6 00   |
| 6. Best Side Board .....                    | 6 00   |
| 2nd do .....                                | 4 00   |
| 7. Best Wardrobe .....                      | 5 00   |
| 2nd do .....                                | 4 00   |

*Miscellaneous.*

|                                                                                                               |       |
|---------------------------------------------------------------------------------------------------------------|-------|
| 8. Best Cooper's Work .....                                                                                   | 4 00  |
| 2nd do .....                                                                                                  | 3 00  |
| 9. Best Curled Hair, 10 lbs .....                                                                             | 3 00  |
| 2nd do .....                                                                                                  | 2 00  |
| 10. Best Handles for tools for carpenters, blacksmiths, gunsmiths, watchmakers, &c., &c., collection of ..... | 8 00  |
| 2nd do .....                                                                                                  | 5 00  |
| 11. Best Joiner's Work, assortment of .....                                                                   | 8 00  |
| 2nd do .....                                                                                                  | 5 00  |
| 12. Best Machine wrought Moulding, and Flooring, 100 feet of each .....                                       | 6 00  |
| 2nd do .....                                                                                                  | 4 00  |
| 13. Best Turning in Wood, collection of specimens .....                                                       | 6 00  |
| 2nd do .....                                                                                                  | 4 00  |
| 14. Best Veneers from Canadian Woods .....                                                                    | 10 00 |
| 2nd do .....                                                                                                  | 6 00  |
| 15. Best Wash-tubs and Wooden Pails, three of each, factory made .....                                        | 4 00  |
| 2nd do .....                                                                                                  | 3 00  |
| 16. Best Willow Ware, six specimens .....                                                                     | 4 00  |
| 2nd do .....                                                                                                  | 3 00  |
| 17. Extra Entries .....                                                                                       |       |

## CLASS XXXIX.—CARRIAGES AND SLEIGHS, AND PARTS THEREOF.

|                                                        |       |
|--------------------------------------------------------|-------|
| 1. Best Axle, wrought iron .....                       | 3 00  |
| 2nd do .....                                           | 2 00  |
| 2. Best bent Shafts, half a dozen .....                | 3 00  |
| 2nd do .....                                           | 2 00  |
| 3. Best Buggy, double seated .....                     | 8 00  |
| 2nd do .....                                           | 6 00  |
| 4. Best Buggy, single seated .....                     | 7 00  |
| 2nd do .....                                           | 5 00  |
| 5. Best Carriage, two horses, pleasure .....           | 12 00 |
| 2nd do .....                                           | 8 00  |
| 6. Best Carriage, one horse, pleasure .....            | 8 00  |
| 2nd do .....                                           | 6 00  |
| 7. Best Child's Carriage .....                         | 4 00  |
| 2nd do .....                                           | 3 00  |
| 8. Dog Cart, single horse .....                        | 6 00  |
| 2nd do .....                                           | 4 00  |
| 9. Best Hubs, two pairs of carriage .....              | 3 00  |
| 2nd do .....                                           | 2 00  |
| 10. Best Rims or Felloes, two pairs of carriage .....  | 3 00  |
| 2nd do .....                                           | 2 00  |
| 11. Best spokes, one dozen machine made carriage ..... | 3 00  |
| 2nd do .....                                           | 2 00  |

|                                                         |         |
|---------------------------------------------------------|---------|
| 12. Best Sleigh, two-horse, pleasure ..                 | \$17 00 |
| 2nd do .....                                            | 8 00    |
| 13. Best Sleigh, one-horse, pleasure ..                 | 5 00    |
| 2nd do .....                                            | 6 00    |
| 14. Best springs, one set of steel carriage ..          | 4 00    |
| 2nd do .....                                            | 3 00    |
| 15. Best Wheels, one pair of carriage (unpainted) ..... | 4 00    |
| 2nd do .....                                            | 3 00    |
| 16. Extras .....                                        |         |

## CLASS XL.—CHEMICAL MANUFACTURES AND PREPARATIONS.

|                                                                 |       |
|-----------------------------------------------------------------|-------|
| 1. Best Essential Oils, assortment of ..                        | 6 00  |
| 2nd do .....                                                    | 4 00  |
| 2. Best Glue, 14 lbs .....                                      | 3 00  |
| 2nd do .....                                                    | 2 00  |
| 3. Best Isinglass, 1 lb .....                                   | 3 00  |
| 2nd do .....                                                    | 2 00  |
| 4. Best Medicinal Herbs, Roots, and Plants, native growth ..... | 12 00 |
| 2nd do .....                                                    | 8 00  |
| 5. Best Oils, Linseed and Rape, and other expressed kinds ..... | 6 00  |
| 2nd do .....                                                    | 4 00  |
| 6. Best Oil, Coal, Shale or Rock .....                          | 6 00  |
| 2nd do .....                                                    | 4 00  |
| 7. Best Varnishes, assortment of .....                          | 6 00  |
| 2nd do .....                                                    | 4 00  |
| 8. Extra Entries .....                                          |       |

## CLASS XLI.—DECORATIVE AND USEFUL ARTS, DRAWINGS AND DESIGNS.

|                                                                                      |       |
|--------------------------------------------------------------------------------------|-------|
| 1. Best Architectural Design, with complete detail Drawings .....                    | 12 00 |
| 2nd do .....                                                                         | 8 00  |
| 2. Best Carving in Wood .....                                                        | 6 00  |
| 2nd do .....                                                                         | 4 00  |
| 3. Best Drawing of Machinery, in perspective .....                                   | 5 00  |
| 2nd do .....                                                                         | 3 00  |
| 4. Best Decorative House Painting ..                                                 | 5 00  |
| 2nd do .....                                                                         | 3 00  |
| 5. Best Engraving on Wood, with proof .....                                          | 5 00  |
| 2nd do .....                                                                         | 3 00  |
| 6. Best Engraving on Copper, with proof .....                                        | 5 00  |
| 2nd do .....                                                                         | 3 00  |
| 7. Best Goldsmith's Work .....                                                       | 5 00  |
| 2nd do .....                                                                         | 3 00  |
| 8. Best Geometrical Drawing of Engine or Millwright work, coloured ..                | 5 00  |
| 2nd do .....                                                                         | 3 00  |
| 9. Best Lithographic Drawing .....                                                   | 5 00  |
| 2nd do .....                                                                         | 3 00  |
| 10. Best Lithographic Drawing, colored ..                                            | 6 00  |
| 2nd do .....                                                                         | 4 00  |
| 11. Best Mantel-piece in Marble .....                                                | 10 00 |
| 2nd do .....                                                                         | 6 00  |
| 12. Best Mathematical, Philosophical and Surveyor's Instruments, collection of ..... | 15 00 |
| 2nd do .....                                                                         | 10 00 |

|                                                      |        |
|------------------------------------------------------|--------|
| 13. Best Modelling in Plaster.....                   | \$6 00 |
| 2nd do.....                                          | 4 00   |
| 14. Best Monumental Tomb or Headstone.....           | 6 00   |
| 2nd do.....                                          | 4 00   |
| 15. Best Picture Frame, ornamented gilt.....         | 5 00   |
| 2nd do.....                                          | 3 00   |
| 16. Best Seal Engraving, with wax impressions.....   | 6 00   |
| 2nd do.....                                          | 4 00   |
| 17. Best Silversmith's Work.....                     | 5 00   |
| 2nd do.....                                          | 3 00   |
| 18. Best Stained Glass, collection of specimens..... | 10 00  |
| 2nd do.....                                          | 6 00   |
| 19. Extra entries.....                               |        |

## CLASS XLII.—FINE ARTS.

*Professional List—Oil.*

|                                                |       |
|------------------------------------------------|-------|
| 1. Best Animals, grouped or single...          | 12 00 |
| 2nd do.....                                    | 8 00  |
| 2. Best Historical Painting.....               | 12 00 |
| 2nd do.....                                    | 8 00  |
| 3. Best Landscape, Canadian Subject.....       | 12 00 |
| 2nd do.....                                    | 8 00  |
| 4. Best Marine Painting, Canadian Subject..... | 12 00 |
| 2nd do.....                                    | 8 00  |
| 5. Best Portrait.....                          | 10 00 |
| 2nd do.....                                    | 7 00  |

*In Water Colours.*

|                                            |      |
|--------------------------------------------|------|
| 6. Best Animals, grouped or single...      | 8 00 |
| 2nd do.....                                | 6 00 |
| 7. Best Flowers, grouped or single...      | 8 00 |
| 2nd do.....                                | 6 00 |
| 8. Best Landscape, Canadian subject.....   | 8 00 |
| 2nd do.....                                | 6 00 |
| 9. Best Marine View, Canadian subject..... | 8 00 |
| 2nd do.....                                | 6 00 |

*Pencil, Crayon, &c.*

|                                  |      |
|----------------------------------|------|
| 10. Best Crayon, coloured.....   | 6 00 |
| 2nd do.....                      | 4 00 |
| 11. Best Crayon, plain.....      | 6 00 |
| 2nd do.....                      | 4 00 |
| 12. Best Pencil Drawing.....     | 6 00 |
| 2nd do.....                      | 4 00 |
| 13. Best Pen and Ink Sketch..... | 6 00 |
| 2nd do.....                      | 4 00 |

*Amateur List—Oil.*

|                                                 |      |
|-------------------------------------------------|------|
| 14. Best Animals, grouped or single...          | 9 00 |
| 2nd do.....                                     | 7 00 |
| 15. Best Historical Painting.....               | 9 00 |
| 2nd do.....                                     | 7 00 |
| 16. Best Landscape, Canadian subject.....       | 9 00 |
| 2nd do.....                                     | 7 00 |
| 17. Best Marine Painting, Canadian subject..... | 9 00 |
| 2nd do.....                                     | 7 00 |
| 18. Best Portrait.....                          | 8 00 |
| 2nd do.....                                     | 6 00 |

*In Water Colours.*

|                                             |        |
|---------------------------------------------|--------|
| 19. Best Animals, grouped or single...      | \$8 00 |
| 2nd do.....                                 | 6 00   |
| 20. Best Flowers, grouped or single...      | 5 00   |
| 2nd do.....                                 | 3 00   |
| 21. Best Landscape, Canadian subject.....   | 8 00   |
| 2nd do.....                                 | 6 00   |
| 22. Best Marine view, Canadian subject..... | 8 00   |
| 2nd do.....                                 | 6 00   |

*Pencil, Crayon, &c.*

|                                  |      |
|----------------------------------|------|
| 23. Best Crayon, coloured.....   | 5 00 |
| 2nd do.....                      | 3 00 |
| 24. Best Crayon, plain.....      | 5 00 |
| 2nd do.....                      | 3 00 |
| 25. Best Pencil Drawing.....     | 5 00 |
| 2nd do.....                      | 3 00 |
| 26. Best Pen and Ink Sketch..... | 5 00 |
| 2nd do.....                      | 3 00 |

*Photography.*

|                                                                                  |       |
|----------------------------------------------------------------------------------|-------|
| 27. Best Ambrotypes, collection of...                                            | 7 00  |
| 2nd do.....                                                                      | 6 00  |
| 28. Best Photograph Portraits, collection of, in duplicate, one set colored..... | 10 00 |
| 2nd do.....                                                                      | 8 00  |
| 29. Best Photograph Portraits, collection of, plain.....                         | 8 00  |
| 2nd do.....                                                                      | 6 00  |
| 30. Best Photograph Landscapes and Views, collection of.....                     | 9 00  |
| 2nd do.....                                                                      | 7 00  |
| 21. Best Photograph Portraits in oil...                                          | 8 00  |
| 2nd do.....                                                                      | 6 00  |
| 32. Extras.....                                                                  |       |

## CLASS XLIII.—GROCERIES AND PROVISIONS.

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| 1. Best Barley, Pearl.....                                               | 3 00 |
| 2d do.....                                                               | 2 00 |
| 2. Best Barley, Pot.....                                                 | 3 00 |
| 2d do.....                                                               | 2 00 |
| 3. Best Bottled Fruits, an assortment, manufactured for sale.....        | 6 00 |
| 2d do.....                                                               | 4 00 |
| 4. Best bottled Pickles, an assortment, manufactured for sale.....       | 6 00 |
| 2d do.....                                                               | 4 00 |
| 5. Best Buckwheat Flour.....                                             | 3 00 |
| 2d do.....                                                               | 2 00 |
| 6. Best Cayenne Pepper, from Capsicums grown in the Province.....        | 2 00 |
| 2d do.....                                                               | 1 00 |
| 7. Best Chickory, 20 lbs. of.....                                        | 3 00 |
| 2d do.....                                                               | 2 00 |
| 8. Best Indian Corn Meal.....                                            | 3 00 |
| 2d do.....                                                               | 2 00 |
| 9. Best Oatmeal.....                                                     | 3 00 |
| 2d do.....                                                               | 2 00 |
| 10. Best Sauces for table use, an assortment, manufactured for sale..... | 6 00 |
| 2d do.....                                                               | 4 00 |



|                                                      |        |
|------------------------------------------------------|--------|
| 11. Best Soaps, collection of assorted fancy .....   | \$6 00 |
| 2d do .....                                          | 4 00   |
| 12. Best Starch, 12 lbs. of Corn .....               | 2 00   |
| 2d do .....                                          | 1 00   |
| 13. Best Starch, 12 lbs. of flour .....              | 2 00   |
| 2d do .....                                          | 1 00   |
| 14. Best Starch, 12 lbs. of potato .....             | 2 00   |
| 2d do .....                                          | 1 00   |
| 15. Best Sugar, 20 lbs. of Beet Root .....           | 3 00   |
| 2d do .....                                          | 2 00   |
| 16. Best Sugar, 20 lbs. of Corn Stalk .....          | 3 00   |
| 2d do .....                                          | 2 00   |
| 17. Best Sugar, one loaf of refined .....            | 5 00   |
| 2d do .....                                          | 3 00   |
| 18. Best Tobacco, 14 lbs. Canadian manufacture ..... | 4 00   |
| 2d do .....                                          | 3 00   |
| 19. Best Wheat Flour .....                           | 4 00   |
| 2d do .....                                          | 3 00   |
| 20. Extra entries .....                              |        |

## CLASS XLIV.—LADIES' WORK.

|                                                             |      |
|-------------------------------------------------------------|------|
| 1. Best Brading .....                                       | 3 00 |
| 2d do .....                                                 | 2 00 |
| 2. Best Crochet Work .....                                  | 3 00 |
| 2d do .....                                                 | 2 00 |
| 3. Best Embroidery in Muslin .....                          | 3 00 |
| 2d do .....                                                 | 2 00 |
| 4. Best Embroidery in Silk .....                            | 3 00 |
| 2d do .....                                                 | 2 00 |
| 5. Best Embroidery in Worsted .....                         | 3 00 |
| 2d do .....                                                 | 2 00 |
| 6. Best gloves, three pairs .....                           | 2 00 |
| 2d do .....                                                 | 1 00 |
| 7. Best Guipure Work .....                                  | 3 00 |
| 2d do .....                                                 | 2 00 |
| 8. Best Knitting .....                                      | 3 00 |
| 2d do .....                                                 | 2 00 |
| 9. Best Lace Work .....                                     | 3 00 |
| 2d do .....                                                 | 2 00 |
| 10. Best Mittens, three pairs of woollen .....              | 2 00 |
| 2d do .....                                                 | 1 00 |
| 11. Best Needle Work, ornamental .....                      | 3 00 |
| 2d do .....                                                 | 2 00 |
| 12. Best Netting; fancy .....                               | 3 00 |
| 2d do .....                                                 | 2 00 |
| 13. Best Plait for Bonnets or Hats, of Canadian Straw ..... | 3 00 |
| 2d do .....                                                 | 2 00 |
| 14. Best Shirt, gentleman's .....                           | 3 00 |
| 2d do .....                                                 | 2 00 |
| 15. Best socks, three pairs of woollen .....                | 2 00 |
| 2d do .....                                                 | 1 00 |
| 16. Best Stockings, three pairs of woollen .....            | 2 00 |
| 2d do .....                                                 | 1 00 |
| 17. Best Tatting .....                                      | 3 00 |
| 2d do .....                                                 | 2 00 |
| 18. Best Wax Fruit .....                                    | 6 00 |
| 2d do .....                                                 | 4 00 |
| 19. Best Wax Flowers .....                                  | 6 00 |
| 2d do .....                                                 | 4 00 |
| 20. Best Worsted Work .....                                 | 3 00 |
| 2d do .....                                                 | 2 00 |

|                                      |        |
|--------------------------------------|--------|
| 21. Best Worsted Work (raised) ..... | \$3 00 |
| 2d do .....                          | 2 00   |
| 22. Extra entries .....              |        |

## CLASS XLV.—MACHINERY, CASTINGS, AND TOOLS.

|                                                                                                                                                    |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1. Best Castings for General Machinery .....                                                                                                       | 10 00 |
| 2d do .....                                                                                                                                        | 6 00  |
| 2. Best Cast Wheel, spur or bevel, not less than 50 lbs. weight .....                                                                              | 8 00  |
| 3. Best Castings for Railways, Railroad Cars and Locomotives, assortment of .....                                                                  | 15 00 |
| 2d do .....                                                                                                                                        | 10 00 |
| 4. Best Edge Tools, an assortment .....                                                                                                            | 20 00 |
| 2d do .....                                                                                                                                        | 12 00 |
| 5. Best Engine, Steam, stationary, of 1 to 4 horse power, in operation .....                                                                       | 20 00 |
| 2d do .....                                                                                                                                        | 12 00 |
| 6. Best Engine, Steam, stationary, five horsepower and upwards, in operation .....                                                                 | 30 00 |
| 2d do .....                                                                                                                                        | 15 00 |
| 7. Best Engine, Hot Air, 1 to 4 horse power, in operation on the ground .....                                                                      | 20 00 |
| 2d do .....                                                                                                                                        | 12 00 |
| 8. Best Pump, in metal .....                                                                                                                       | 5 00  |
| 2d do .....                                                                                                                                        | 3 00  |
| 9. Best Refrigerator .....                                                                                                                         | 6 00  |
| 2d do .....                                                                                                                                        | 4 00  |
| 10. Best Sewing Machine, manufacturing .....                                                                                                       | 10 00 |
| 2d do .....                                                                                                                                        | 7 00  |
| 11. Best Sewing Machine, family .....                                                                                                              | 10 00 |
| 2d do .....                                                                                                                                        | 7 00  |
| 12. Best Scales, platform .....                                                                                                                    | 5 00  |
| 2d do .....                                                                                                                                        | 3 00  |
| 13. Best Scales, counter .....                                                                                                                     | 3 00  |
| 2d do .....                                                                                                                                        | 2 00  |
| 14. Best Smoke Consuming Furnace, in operation on the ground .....                                                                                 | 12 00 |
| 2d do .....                                                                                                                                        | 8 00  |
| 15. Best Tools for Working in Metals, assortment of .....                                                                                          | 15 00 |
| 2d do .....                                                                                                                                        | 10 00 |
| 16. Best Turning Lathe .....                                                                                                                       | 5 00  |
| 2d do .....                                                                                                                                        | 3 00  |
| 17. Best Valves and Gearing for working steam expansively, either in model or otherwise, principle of working to be the point of competition ..... | 12 00 |
| 2d do .....                                                                                                                                        | 8 00  |
| 18. Extra entries .....                                                                                                                            |       |

CLASS XLVI.—METAL WORK (MISCELLANEOUS)  
INCLUDING STOVES.*Miscellaneous.*

|                                                 |      |
|-------------------------------------------------|------|
| 1. Best Coal Oil Lamps, an assortment .....     | 8 00 |
| 2d do .....                                     | 6 00 |
| 2. Best Coppersmith's Work, an assortment ..... | 7 00 |
| 2d do .....                                     | 5 00 |
| 3. Best Fire Arms, an assortment .....          | 7 00 |
| 2d do .....                                     | 5 00 |
| 4. Best Files, collection of cast steel .....   | 3 00 |
| 2d do .....                                     | 2 00 |

|                                                            |        |
|------------------------------------------------------------|--------|
| 6. Best Fire Proof Office Safe.....                        | \$8 00 |
| 3d do.....                                                 | 6 00   |
| 7. Best Gas Fittings, an assortment...                     | 7 00   |
| 2d do.....                                                 | 5 00   |
| 8. Best Iron Fencing, and Gate, ornamental .....           | 7 00   |
| 2d do.....                                                 | 5 00   |
| 9. Best Iron Work from the hammer, ornamental .....        | 7 00   |
| 2d do.....                                                 | 7 00   |
| 10. Best Iron Work, ornamental cast. ....                  | 6 00   |
| 2d do.....                                                 | 4 00   |
| 11. Best Locksmith's work, an assortment                   | 7 00   |
| 2d do.....                                                 | 5 00   |
| 12. Best Nails, 20 lbs. of pressed.....                    | 6 00   |
| 2d do.....                                                 | 4 00   |
| 13. Best Nails, 20 lbs. cut .....                          | 6 00   |
| 2d do.....                                                 | 4 00   |
| 14. Best Plumber's work, an assortment                     | 6 00   |
| 2d do.....                                                 | 4 00   |
| 15. Best Sheet Brass Work, an assortment                   | 7 00   |
| 2d do.....                                                 | 5 00   |
| 16. Best Tinsmith's Work, an assortment.....               | 6 00   |
| 2d do.....                                                 | 4 00   |
| 17. Best Tinsmith's Lacquered Work, an assortment of ..... | 6 00   |
| 2d do.....                                                 | 4 00   |
| 18. Best Wire Work, an assortment .....                    | 6 00   |
| 2d do.....                                                 | 4 00   |

*Stoves.*

|                                                        |      |
|--------------------------------------------------------|------|
| 19. Best Cooking Stove, for wood, with furniture ..... | 6 00 |
| 2d do.....                                             | 4 00 |
| 20. Best Cooking Stove, for coal, with furniture ..... | 6 00 |
| 2d do.....                                             | 4 00 |
| 21. Best hall stove for coal.....                      | 5 00 |
| 2d do.....                                             | 3 00 |
| 22. Best Hall Stove, for wood .....                    | 5 00 |
| 2d do.....                                             | 3 00 |
| 23. Best Parlour Stove, for wood.....                  | 5 00 |
| 2d do.....                                             | 3 00 |
| 24. Best Parlour Stove, for coal .....                 | 5 00 |
| 2d do.....                                             | 3 00 |
| 25. Best Parlour Grate .....                           | 6 00 |
| 2d do.....                                             | 4 00 |
| 26. Extra entries .....                                |      |

CLASS XLVII—MISCELLANEOUS, INCLUDING  
POTTERY AND INDIAN WORK.*Miscellaneous.*

|                                         |      |
|-----------------------------------------|------|
| 1. Best Brushes, an assortment.....     | 6 00 |
| 2d do.....                              | 4 00 |
| 2. Best Model of a Steam Vessel .....   | 6 00 |
| 2d do.....                              | 4 00 |
| 3. Best Model of a Sailing Vessel ..... | 6 00 |
| 2d do.....                              | 4 00 |

*Pottery.*

|                                 |      |
|---------------------------------|------|
| 4. Best Filterer for water..... | 3 00 |
| 2d do.....                      | 2 00 |

|                                                             |        |
|-------------------------------------------------------------|--------|
| 5. Best Pottery, an assortment.....                         | \$8 00 |
| 2d do.....                                                  | 5 00   |
| 6. Best Sewerage Pipes, stoneware, assortment of sizes..... | 10 00  |
| 2d do.....                                                  | 6 00   |
| 7. Best Stoneware, an assortment.....                       | 10 00  |
| 2d do.....                                                  | 6 00   |
| 8. Best Slates for roofing .....                            | 8 00   |
| 2d do.....                                                  | 5 00   |

*Indian Work.*

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| 9. Best Buckskin Mittens, one pair....                                   | 2 00 |
| 2d do.....                                                               | 1 00 |
| 10. Best Clothes Basket.....                                             | 2 00 |
| 2d do.....                                                               | 1 00 |
| 11. Best Fruit Basket .....                                              | 2 00 |
| 2d do.....                                                               | 1 00 |
| 12. Best Hand Basket.....                                                | 2 00 |
| 2d do.....                                                               | 2 00 |
| 13. Best Moccasins, one pair of plain...                                 | 2 00 |
| 2d do.....                                                               | 1 00 |
| 14. Best Moccasins, worked with beads or porcupine quills, one pair..... | 3 00 |
| 2d do.....                                                               | 2 00 |
| 15. Extra entries .....                                                  |      |

## CLASS XLVIII.—MUSICAL INSTRUMENTS.

|                              |       |
|------------------------------|-------|
| 1. Best Harmonium .....      | 10 00 |
| 2d do.....                   | 6 00  |
| 2. Best Melodeon .....       | 6 00  |
| 2d do.....                   | 4 00  |
| 3. Best Organ, Church .....  | 25 00 |
| 2d do.....                   | 15 00 |
| 4. Best Piano, Square.....   | 15 00 |
| 2d do.....                   | 10 00 |
| 5. Best Piano, Grand.....    | 15 00 |
| 2d do.....                   | 10 00 |
| 6. Best Piano, Cottage ..... | 10 00 |
| 2d do.....                   | 6 00  |
| 7. Best Violin.....          | 3 00  |
| 2d do.....                   | 2 00  |

## CLASS XLIX.—NATURAL HISTORY.

|                                                                                                                                                                |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Best collection of stuffed Birds of Canada, classified, and common and technical names attached.....                                                        | 8 00 |
| 2d do.....                                                                                                                                                     | 6 00 |
| 2. Best collection of Native Fishes, stuffed or preserved in spirits, and common and technical names attached .....                                            | 8 00 |
| 2d do.....                                                                                                                                                     | 6 00 |
| 3. Best collection of Native Insects, classified, and common and technical names attached.....                                                                 | 8 00 |
| 2d do.....                                                                                                                                                     | 6 00 |
| 4. Best collection of Mammalia and Reptiles of Canada, stuffed or preserved in spirits, classified, and common and technical names attached, a collection..... | 8 00 |
| 2d do.....                                                                                                                                                     | 6 00 |



|                                                                                                                                                     |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 5. Best collection of Minerals of Canada, named and classified.....                                                                                 | 8 00 |
| 2d do.....                                                                                                                                          | 6 00 |
| 6. Best collection of Native plants, arranged in their natural families, and named.....                                                             | 8 00 |
| 2d do.....                                                                                                                                          | 6 00 |
| 7. Best collection of Stuffed Birds and Animals of any country, collection of.....                                                                  | 8 00 |
| 2d do.....                                                                                                                                          | 6 00 |
| 8. Best collection of the Woods of Canada, in boards two feet long, 1 side polished; also a portion of the tree cut in sections, showing the bark.. | 8 00 |
| 2d do.....                                                                                                                                          | 6 00 |
| 9. Extra entries.....                                                                                                                               |      |

## CLASS L.—PAPER, PRINTING, BOOKBINDING AND TYPE.

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| 1. Best Bookbinding (blank-book), assortment of.....                    | 5 00 |
| 2d do.....                                                              | 3 00 |
| 2. Best Bookbinding (letter-press), assortment of.....                  | 5 00 |
| 2d do.....                                                              | 3 00 |
| 3. Best Letter-press Printing, plain.....                               | 5 00 |
| 2d do.....                                                              | 3 00 |
| 4. Best Letter-press Printing, ornamental.....                          | 5 00 |
| 2d do.....                                                              | 3 00 |
| 4. Best Paper Hangings (Canadian paper), one dozen rolls, assorted..... | 7 00 |
| 2d do.....                                                              | 5 00 |
| 6. Best Printing, Wrapping, and Writing Papers, one ream of each.....   | 7 00 |
| 2d do.....                                                              | 5 00 |
| 7. Best Printing Type, an assortment.....                               | 7 00 |
| 2d do.....                                                              | 5 00 |
| 8. Extra entries.....                                                   |      |

## CLASS LI.—SADDLE, ENGINE, HOSE, AND TRUNK MAKERS' WORK, AND LEATHER.

*Saddlery, &c.*

|                                                                                        |      |
|----------------------------------------------------------------------------------------|------|
| 1. Best Engine Hose and Joints, 2½ inches in diameter, 50 feet of copper rivetted..... | 6 00 |
| 2d do.....                                                                             | 4 00 |
| 2. Best Harness, sett of double carriage.....                                          | 8 00 |
| 2d do.....                                                                             | 6 00 |
| 3. Best Harness, set of single carriage.....                                           | 6 00 |
| 2d do.....                                                                             | 4 00 |
| 4. Best Harness, set of team.....                                                      | 6 00 |
| 2d do.....                                                                             | 3 00 |
| 5. Best Saddle, Ladies' full quilted.....                                              | 8 00 |
| 2d do.....                                                                             | 6 00 |
| 6. Best Saddle, Ladies, quilted safe.....                                              | 6 00 |
| 2d do.....                                                                             | 4 00 |
| 7. Best Saddle, Gentlemen's full quilted.....                                          | 7 00 |
| 2d do.....                                                                             | 5 00 |
| 8. Best Saddle, Gentleman's plain shafte.....                                          | 5 00 |
| 2d do.....                                                                             | 3 00 |
| 9. Best Trunks, an assortment.....                                                     | 8 00 |
| 2d do.....                                                                             | 6 00 |

|                                                             |      |
|-------------------------------------------------------------|------|
| 10. Best Valises, and Travelling Bags, an assortment.....   | 5 00 |
| 2d do.....                                                  | 3 00 |
| 11. Best Whips, and Thongs, an assortment.....              | 6 00 |
| 2d do.....                                                  | 4 00 |
| 12. Best Hames, four pairs of iron carriage or gig.....     | 3 00 |
| 2d do.....                                                  | 2 00 |
| 13. Best Hames, three pairs of iron cased term or cart..... | 3 00 |
| 2d do.....                                                  | 2 00 |
| 14. Best Hames, six pairs of wooden team.....               | 3 00 |
| 2d do.....                                                  | 2 00 |

*Leather.*

|                                                                     |      |
|---------------------------------------------------------------------|------|
| 15. Best Belt Leather, 30 lbs.....                                  | 3 00 |
| 2d do.....                                                          | 2 00 |
| 16. Best Brown Strap and Bridle, one side of each.....              | 3 00 |
| 2d do.....                                                          | 2 00 |
| 17. Best Carriage cover, two skins.....                             | 3 00 |
| 2d do.....                                                          | 2 00 |
| 18. Best Deerskins, dressed.....                                    | 2 00 |
| 3d do.....                                                          | 1 00 |
| 19. Best Harness Leather, two sides.....                            | 3 00 |
| 2d do.....                                                          | 2 00 |
| 20. Best Hog Skins, for saddles, three.....                         | 4 00 |
| 2d do.....                                                          | 3 00 |
| 21. Best Patent Leather, for carriage or harness work, 20 feet..... | 6 00 |
| 2d do.....                                                          | 4 00 |
| 22. Best Skirting for saddles, two sides.....                       | 4 00 |
| 2d do.....                                                          | 3 00 |
| 23. Extra entries.....                                              |      |

## CLASS LII.—SHOE AND BOOT MAKERS' WORK, LEATHER, &amp;c.

*Boots, &c.*

|                                                                  |      |
|------------------------------------------------------------------|------|
| 1. Best Boots, Ladies', an assortment.....                       | 7 00 |
| 2d do.....                                                       | 5 00 |
| 2. Best Boots, Gentlemen's sewed, an assortment.....             | 7 00 |
| 2d do.....                                                       | 5 00 |
| 3. Best Boots, pegged, an assortment.....                        | 5 00 |
| 2d do.....                                                       | 3 00 |
| 4. Best Boot and Shoemakers' Tools, an assortment.....           | 8 00 |
| 2d do.....                                                       | 6 00 |
| 5. Best Boot and Shoemakers' Lasts and Trees, an assortment..... | 8 00 |
| 2d do.....                                                       | 6 00 |

*Leather.*

|                                      |      |
|--------------------------------------|------|
| 6. Best Calf Skins.....              | 3 00 |
| 2d do.....                           | 2 00 |
| 7. Best Calf Skins, two morocco..... | 3 00 |
| 2d do.....                           | 2 00 |
| 8. Best Cordovan, two skins of.....  | 3 00 |
| 2d do.....                           | 2 00 |

|                                                         |        |
|---------------------------------------------------------|--------|
| 9. Best Dog Skins, two dressed.....                     | \$3 00 |
| 2d do.....                                              | 2 00   |
| 10. Best Kip Skins, two sides.....                      | 3 00   |
| 2d do.....                                              | 2 00   |
| 11. Best Linings, six skins.....                        | 3 00   |
| 2d do.....                                              | 2 00   |
| 12. Best Patent Leather for bootmakers,<br>20 feet..... | 6 00   |
| 2d do.....                                              | 4 00   |
| 13. Best Sheep Skins, six coloured.....                 | 3 00   |
| 2d do.....                                              | 2 00   |
| 14. Best Sole Leather, two sides.....                   | 3 00   |
| 2d do.....                                              | 2 00   |
| 15. Best Upper Leather, two sides.....                  | 3 00   |
| 2d do.....                                              | 2 00   |
| 16. Extra entries.....                                  |        |

CLASS LIII.—WOOLLEN, FLAX, AND COTTON  
GOODS; AND FURS AND WEARING APPAREL.

|                                                                                 |       |
|---------------------------------------------------------------------------------|-------|
| 1. Best Bags, from flax or hemp, the<br>growth of Canada, one dozen.....        | 5 00  |
| 2d do.....                                                                      | 4 00  |
| 2. Best Bags, one dozen cotton.....                                             | 4 00  |
| 2d do.....                                                                      | 3 00  |
| 3. Best Blankets, woollen, one pair.....                                        | 6 00  |
| 2d do.....                                                                      | 4 00  |
| 4. Best Carpet, woollen, one piece.....                                         | 8 00  |
| 2d do.....                                                                      | 6 00  |
| 5. Best Carpet, woollen stair, one piece.....                                   | 6 00  |
| 2d do.....                                                                      | 4 00  |
| 6. Best Cloth, fulled, one piece.....                                           | 6 00  |
| 2d do.....                                                                      | 4 00  |
| 7. Best Cloth, broad, one piece.....                                            | 6 00  |
| 2d do.....                                                                      | 4 00  |
| 8. Best Counterpanes, two.....                                                  | 5 00  |
| 2d do.....                                                                      | 3 00  |
| 9. Best Cordage and Twines, from Cana-<br>dian flax or hemp, assortment of..... | 10 00 |
| 2d do.....                                                                      | 6 00  |
| 10. Best Check for horse collars, one<br>piece.....                             | 4 00  |
| 2d do.....                                                                      | 3 00  |
| 11. Best Drawers, factory made, woollen,<br>one pair.....                       | 4 00  |
| 2d do.....                                                                      | 3 00  |
| 12. Best Flannel, factory made, one piece.....                                  | 5 00  |
| 2d do.....                                                                      | 3 00  |
| 13. Best Flannel, not factory made, one<br>piece.....                           | 5 00  |
| 2d do.....                                                                      | 3 00  |
| 14. Best Flannel, scarlet, one piece.....                                       | 5 00  |
| 2d do.....                                                                      | 3 00  |
| 15. Best Fur Cap and Gloves.....                                                | 4 00  |
| 2d do.....                                                                      | 3 00  |
| 16. Best Fur Sleigh Robe.....                                                   | 5 00  |
| 2d do.....                                                                      | 3 00  |
| 17. Best Gloves and Mitts of any leather,<br>an assortment.....                 | 4 00  |
| 2d do.....                                                                      | 3 00  |
| 18. Best Horse blankets, two pairs.....                                         | 5 00  |
| 2d do.....                                                                      | 3 00  |
| 19. Best Kersey for horse clothing, one<br>piece.....                           | 5 00  |
| 2d do.....                                                                      | 3 00  |

|                                                                                                        |        |
|--------------------------------------------------------------------------------------------------------|--------|
| 20. Best Linden Goods, one piece.....                                                                  | \$5 00 |
| 2nd do.....                                                                                            | 3 00   |
| 21. Best Winsey, checked, one piece.....                                                               | 5 00   |
| 2d do.....                                                                                             | 3 00   |
| 22. Best Satinet, black, one piece.....                                                                | 6 00   |
| 2d do.....                                                                                             | 4 00   |
| 23. Best Satinet, mixed, one piece.....                                                                | 5 00   |
| 2d do.....                                                                                             | 3 00   |
| 24. Best Shirts, factory made, three<br>woollen.....                                                   | 5 00   |
| 2d do.....                                                                                             | 3 00   |
| 25. Best Silk and Felt Hats.....                                                                       | 5 00   |
| 2d do.....                                                                                             | 3 00   |
| 26. Best Stockings, and Socks, factory<br>made, woollen, three pairs each.....                         | 4 00   |
| 2d do.....                                                                                             | 2 00   |
| 27. Best Stockings, and Socks, factory<br>made, mixed woollen, and cotton,<br>three pairs of each..... | 4 00   |
| 2d do.....                                                                                             | 2 00   |
| 28. Best Suit of Clothes of Canadian cloth.....                                                        | 10 00  |
| 2d do.....                                                                                             | 6 00   |
| 29. Best Tweed, winter, one piece.....                                                                 | 6 00   |
| 2d do.....                                                                                             | 4 00   |
| 30. Best Tweed, summer, one piece.....                                                                 | 6 00   |
| 2d do.....                                                                                             | 4 00   |
| 31. Best Twines, linen and cotton, an as-<br>sortment.....                                             | 3 00   |
| 2d do.....                                                                                             | 2 00   |
| 32. Best Woollen Cloths, Tweeds, &c.,<br>an assortment.....                                            | 10 00  |
| 2d do.....                                                                                             | 6 00   |
| 33. Best Woollen Shawls, Stockings,<br>Drawers, Shirts and Mitts, an assort-<br>ment.....              | 10 00  |
| 2d do.....                                                                                             | 6 00   |
| 34. Best Yarn, white and dyed, one pound<br>of each.....                                               | 2 00   |
| 2d do.....                                                                                             | 1 00   |
| 35. Best Yarn, fleecy woollen, for knitt-<br>ing, one pound.....                                       | 2 00   |
| 2d do.....                                                                                             | 1 00   |
| 36. Best Yarn, cotton, two pounds.....                                                                 | 2 00   |
| 2d do.....                                                                                             | 1 00   |
| 37. Extra entries.....                                                                                 |        |

CLASS LIV.—FOREIGN MANUFACTURES.

Foreign articles will be admitted for exhibition only; but Certificates will be awarded to any article of worth or peculiar merit.

MUSIC.

The following prizes are offered for Instru-  
mental Bands:—

|                                                                                                                                                                |         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| For the Best Canadian Amateur Band<br>consisting of not less than eight per-<br>formers, of whom there shall not be<br>more than two professional artists..... | \$60 00 |
| 2d do.....                                                                                                                                                     | 40 00   |
| 3d do.....                                                                                                                                                     | 20 00   |

Each Band will be required to execute the fol-  
lowing pieces of music, viz:—The National  
Anthem; Rule Britannia; a quick Step; Waltz;  
Song; Polka; Set of Quadrills, and a Medley



or Operatic Piece; and to be on the grounds under the direction of the Committee during the continuance of the Exhibition. Bands intending to compete will communicate their intention to the Secretary of the Association at Toronto, at least a week before the Exhibition commences. The Bands will be required to be on the ground on Thursday and Friday.

### Miscellaneous.

#### Collections of Natural History.

There are few individuals who have not in the course of their lives, met with objects of Natural History which they considered worth preserving; but from the want of knowledge how to proceed to cure or preserve them, have been unable to do so. Indeed many fine specimens have been lost from this cause alone. With no taxidermist near at hand, many a beautiful and rare plumaged bird, or some fine specimen of rare quadrupeds, have been thrown away.

The advantages to be derived from a collection of objects of natural History, are too apparent to require any illustration. And their beauty and variety of plumage and the variety of their forms, have, in a preserved state, ever attracted the admiration of mankind as being next in point of interest to the living animals. Although good drawings and engravings will give us a perfect knowledge of the general appearance of animals, still they are deficient in many particulars, for by them we cannot be made acquainted with the color or the structure of the hair or feathers. The naturalist on all occasions prefers a reference to the stuffed bird to that of a pictorial representation, as by this means he is enabled to trace, compare, and decide on the creature in its several characters and relations. The farmer, the merchant, the lawyer, the mechanic, and the laborer, for it is within the reach of all, can have a Museum or Cabinet of their own, that will enable them, as it were, to look upon the mighty field of nature at one view, with the advantage of having the various classes placed in systematic order, to investigate which in their native wilds would be the business of a life-time. Besides, we can here contemplate without fear the most destructive and furious quadrupeds. Here we can muse upon and study the singularity of organization pointed out by the naturalist.

The collection and preservation of the different insects forms a great addition to the cabinet of the farmer as well as to the entomologist. In this way the farmer can collect the enemies of his crops, and place them in a position where he can muse and study upon their different forms and organization. Minerals and shells, on account of the elegance of their forms and beauty of their colors, should have a place on the shelves of every farmer's cabinet. There is no species in remote countries that does not deserve to be brought home; the things most com-

mon in those countries are frequently rare at home. Upon every farm are some land shells generally little known, which should be picked up when found, and saved. I will in a future number, give some plain directions for preserving insects, skinning and stuffing some of the different birds, &c.

S. P. KEATOR.

#### —Country Gentleman

ITEMPERANCE IN THINKING.—There are other and subtler forms of intemperance. There is intemperance in thinking as well as in drinking as well as in eating, an intemperance which civilisation tends, in some respects, to increase, and which assumes not unfrequently the aspect of a virtue rather than of a vice. It is not the sensual and the grovelling, it is rather the spiritual and the aspiring, that most readily fall into this form of intemperance. The reason is patent on a slight consideration. Labour of the limbs and muscles betrays its effects by obvious exhaustion; but mental labour seems so unlike what is called bodily labour that its bodily instrument—the brain—is forgotten, even if the connection is not, as it too often is, unknown. The thinker, the writer, the speaker, are ignorant or forgetful that the brain with which they work is subject, and in still higher degree, to the same law of frequent alteration of exercise and repose as the rest of the bodily organs. Its very patient endurance is abused, its gentle warnings are unheeded, and too often irreparable injury is sustained before even its beginning is suspected. All professions—the bar, the pulpit, the press; science and literature, politics and commerce, have each its long list of victims to an unenlightened ardour, to an impetuous zeal, not the less to be deplored because its objects are in themselves commonly innocent, or even praiseworthy. In our very universities and schools, before the race of life is well begun the seeds of early decay and of premature debility are too often sown, and in those very youths whose lives are of the utmost value to their race. Such cases we must all of us have seen. But, alas! their example is too often held up for imitation rather than warning; and the mysterious decrees of Providence are too frequently invoked to explain what is but too easily explicable. It has been well said, that if we could with impunity violate the divinely-appointed conditions of our being, there indeed would be a mystery. Perfect health and long life in one student, who adds the night into the day, and habitually disregards the claims of that part of his nature which, because it is the lower, is not the less, but all the more indispensable, would truly be a greater mystery, and even miracle, than the early death of a thousand such. It is earnestly to be wished that the lives of men like Kirke White, and of others nearer our own time that I could name, were re-written, and made to yield a new, wholesome, and much-needed lesson.—*Dr. W. B. Hodgson: "Lectures on the Conditions of Health and Wealth."*

**ANIMALS DESTROYING EACH OTHER**—The instinct of animals to devour each other is well set off by the following lines of the late prime minister, Canning:

"Tell me, tell me, gentle robin,  
What is it that sets thy breast a throbbing?  
Is it that grimalkin, fell,  
Hath killed thy father or thy mother,  
Thy sister or thy brother,  
Or any other?  
Tell me but that,  
And I'll kill the cat.  
But stay, little robin, did you ever spare  
A grub in the ground or a fly in the air?  
No, that you never did, I'll swear.  
So I won't kill the cat,  
That's flat!"

**COVENT-GARDEN MARKET.**—The two great national theaters on one side, a churchyard full of mouldy but undying celebrities on the other, a fringe of houses studded in every part with anecdote and history, a colonnade often more gloomy and deserted than a cathedral aisle, a rich cluster of brown old taverns—one of them filled with the counterfeit presentment of many actors long since silent, who scowl or smile once more from the canvas upon them grandsons of their dead admirers; a something in the air which breathes of old books, old pictures, old painters, and old authors; a place beyond all other places one would choose in which to hear the chimes at midnight; a crystal palace—the representative of the present—which peeps in timidly from a corner upon many things of the past; a wretched bread bank that has been sucked dry by a felonious clerk; a squat building, with a hundred columns and chapel-looking fronts, which always stands knee-deep in baskets, flowers, and scattered vegetables; a common centre into which Nature showers her choicest gifts, and where the kindly fruits of the earth often nearly chooke the narrow thoroughfares; a population that never seems to sleep, and that does all in its power to prevent others sleeping; a place where the very latest suppers and the earliest breakfasts jostle each other on the footways—such is Covent-garden market, with some of its surrounding features.—*Cornhill Magazine* for March.

**THE EYTRICK SHEPHERD'S DOG.**—This dog, though of a sullen disposition, managed a flock with extraordinary skill. On one occasion, about seven hundred lambs, which were under his care at weaning time, broke up at midnight, and scampered of in three divisions across the hills, in spite of all that his master and an assistant lad could do to keep them together. "Sirrah," cried the shepherd in much sorrow, "my man; they're a' awa'." The night was so dark that he could not see his dog; but no sooner did Sirrah hear these words, than he quietly set

off in search of the lambs. The shepherd and the lad did, meanwhile, what they could, and spent the whole night in scouring the country for miles around, but of neither the flock nor the dog could they find a trace. "It was" says Hogg, "the most extraordinary circumstance that had ever occurred in the annals of pastoral life. As day had dawned, we had nothing for it but to return to our master, and tell him we had lost his whole flock of lambs, and knew not what was become of one of them. On our way home, however, we discovered a body of lambs at the bottom of a deep ravine, and the indefatigable Sirrah standing in front of them, looking all around for some relief, but still true to his charge. The sun was then up; and, when we first came in view of them, we concluded it was one of the divisions of the lambs that Sirrah had been unable to manage until he came to that commanding situation.—But what was our astonishment when we discovered by degrees that not one lamb of the whole flock was wanting! How he had got all the divisions collected in the dark is beyond my comprehension. The charge was left entirely to himself from midnight until the rising of the sun; and, if all the shepherds in the forest had been there to have assisted him, they could not have effected it with greater propriety. All that I can further say is, that I never felt so grateful to any creature below the sun as I did to my honest Sirrah that morning."—*Cassell's Popular Natural History.*

**THE COLONIES OF GREAT BRITAIN.**—As the Roman matron said of her children, so may the Sovereign of Great Britain speak of the colonial dependencies of her crown—"These are my jewels!" British India is the Koh-i-noor; Ceylon and Mauritius pearls of great price; Canada a ruby; Australia and British Columbia golden nuggets; the Cape Colony an emerald; and all the other dependencies of the empire brilliants and gems, conferring additional lustre on her diadem. Many a nation of Europe envies us the possession of these numerous colonies spreading over tropical and temperate zones, reaching in the western hemisphere from Vancouver in the north to the Falkland Isles in the south, and in the eastern, from Hong Kong to New Zealand. How little progress have European nations made in colonization compared with ourselves! France has her colonies, few and weak; Russia has hers, military and extensive, but miserable and oppressed. The Portuguese and Danish settlements are scarcely worth mentioning, and those countries have been parting with their possessions rather than extending. Holland still retains her eastern colonies far away from the European seats of Government. But the aggregate of all these colonial possessions is insignificant as compared with those of the United Kingdom.—*London Review.*



**SUBSTITUTE FOR LEATHER.**—Not the least remarkable feature of the present day is the almost universal application of a new discovery, intended, perhaps to supply a want in one particular branch of industry. We are not therefore, surprised to learn that M. Szerelmey, has adapted his process of indurating stone to other substances; and as an instance of this in the Houses of Parliament alone, where its first trial took place, it is used also to prevent rust. Wood, too, is subject to the "Zopissa" process; and last year it was found to act wonderfully on calico, cloth, moleskin, &c., rendering them waterproof, and capable of being worked up into most wonderful imitations of the varieties of dress leather. This last application has recently been patented; and a company is now being formed for the manufacture of boots and shoes, of which the upper leathers are to be made of this new material, which, soft to the foot, adapting itself like a glove, is not liable to crack or shrink, is impervious to wet, and permits the perspiration to pass off. Other improvements, too, in the manufacture itself, are introduced. The sole is divided along the side, leaving the upper portion of it to protect the foot from the rivets; and the hard side of the leather, too, is lowest, leaving the soft side (the "sucker" propensities of which we have doubtless all proved experimentally) to be presented to the foot to absorb its moisture, and not to the ground as is now done. This new material, and the improvements we have mentioned, will, no doubt, recommend themselves, and from the cheapness of the former a great reduction in the price of boots and shoes may be expected.

**ALTITUDE AND DIMENSIONS OF LAKES.**—The great Lake of Titicaca, between Bolivia and Peru, South America, and which is 12,850 feet, or nearly two and a half miles above the level of the sea, is 170 miles in its greatest length and 70 miles in its greatest breadth. Soundings of 120 fathoms have been taken near the shore, and the depth further out is believed to be much greater. The great North American lakes are from 230 feet to 610 feet only above the level of the sea. The Lake of Luzerne, the highest water navigated by steamers in Europe, is 1,406 feet above the sea, and Chautauque Lake, in the the State of New York, and which is the highest lake yet navigated by steam in America, is 1,306 feet above the sea. The Lake of Titicaca would, if the vessels could get there, float all the navies of the world.

**READY WIT.**—The Rev. Dr. McLeod was proceeding from the manse of D—— to church, to open a new place of worship. As he passed slowly and gravely through the crowd gathered about the doors, an elderly man, with the peculiar kind of wig known in that district—bright, smooth, and of reddish brown—accosted him: "Doctor, if you please, I wish to speak

to you." "Well, Duncan," says the venerable Doctor, "can ye not wait till after worship?" "No, Doctor, I must speak to you now, for it is a matter upon my conscience." "Oh, since it is a matter of conscience, tell me what it is; but be brief, Duncan, for time presses." "The matter is this, Doctor. Ye see the clock yonder on the face of the new church? Well, there is no clock really there—nothing but the face of a clock. There is no truth in it, but only once in the twelve hours. Now, it is, in my mind, very wrong, and, quite against my conscience, that there should be a lie on the face of the house of the Lord." "Duncan, I will consider the point. But I am glad to see you looking so well; you are not young now; I remember you for many years; and what a fine head of hair you have still!" "Eh, Doctor, you are joking now; it is long since I have had any hair." "Oh, Duncan, are you going into the house of the Lord with a lie upon your head?" This settled the question; and the Doctor heard no more of the lie on the face of the clock.—*North British Review.*

**REMEDY FOR RING WORM.**—The *North British Agriculturist* says that the disease locally known as ringworm or tetter, which shows itself about the head and neck of young cattle, in the form of whitish dry, scurvy spots, can be removed by rubbing the parts affected with iodine ointment. The disease may also be combated by the use of sulphur and oil; iodine ointment is, however, to be preferred. As this skin disease is easily communicated to the human subject, the person dressing the cattle should wash his hands with soap and hot water after each application of the ointment.

## Editorial Notices, &c.

**THE PROVINCIAL EXHIBITION.**—This number of the *Agriculturist* contains the Prize List for the Provincial Exhibition of this year, although with the dates on which entries are to be made and the Show held, left blank. The Board of Agriculture had fixed upon the week commencing September 29, and ending October 4, for the Exhibition, and the Prize List had been committed to the printer's hands, when it was ascertained that the New York State Agricultural Society had selected the same days for their Show at Rochester. As a great number of persons from each country will be desirous of visiting the Show held in the other, especially when the sites are so contiguous, and would be much disappointed if they were prevented doing so, it is of course

desirable to avoid a clashing of the days, if possible. Some correspondence, therefore, has taken place with the New York Society, having for its object a change of the days of exhibition by one or other of the Societies, so as to avoid a clashing of interests, and the issue of the present number has been delayed some days in the expectation of the decision of the New York Society being ascertained. At the hour of going to press, however, the final conclusion of the Directors of that Society who were to hold a meeting expressly to consider the subject, has not been received, and therefore our Prize List appears, as above stated, with the dates open. If the New York Society agree to change their days then the Upper Canada Show will take place upon the days first fixed upon, viz., Sept. 29 to Oct. 3. If, however, the New York Society determine to adhere to their days, then our Show will be held either one week earlier or one week later, and most probably at the earlier period, viz., on the week commencing the 22nd and ending 27th of September. We shall undoubtedly be able to announce the exact days in our next.

BLACKWOOD'S MAGAZINE, for April: New York, Leonard Scott & Co., 79 Fulton Street.

The contents of the present number of this talented and long established British periodical will be found as usual, exceedingly interesting; they are as follows:—Caxtoniana; a series of Essays on Life, Literature and Morals—part third; The Lives of two Ladies; Political Tragedies in Japan; a Box of Books; Works of Charles Lever; The International Exhibition—its purposes and prospects; Chronicles of Carlingford; Salem Chapel—part third; Spence's American Union.

We gave an extended notice of the American Edition of Blackwood, and the four leading British Reviews in our March number, (page 189) to which we beg again to call the attention of our readers. They contain the cream of British Literature, using that term in its highest and widest acceptance, at a marvellously low price. Mr. Rowsell of this city, and the principal booksellers throughout the British Provinces are agents for these standard works.

### Spring and Summer Horticultural and other Shows.

We are informed of the following Shows to take place this Spring. We request Secretaries of Agricultural Societies to inform us of the date of their Exhibitions at as early a date as possible, so as to admit of publication in time to be of use to those interested.

Hamilton Horticultural Society, 1st Show May 24-

Niagara Electoral Division Society, at Niagara, June 27th.

Kingston Electoral Division Society, Horticultural Show, at Kingston, July 2nd.

### FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,  
Dover Court.

Toronto, Aug., 1861.

### Notice of Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

### NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

### THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

JOHN SNELL,  
Edmonton, P. O., C. W.



## GEORGE LESLIE, NURSERYMAN.

OFFERS FOR SALE, THIS SPRING, A  
GENERAL assortment of Nursery Stock,  
consisting of

Apples, Standard and Dwarfs,  
(cherries, do. do.  
Pears, do. do.  
Plums, do. do.  
Peaches, do. do.  
Appricots and Nectarines,

## GRAPE VINES,

NATIVE AND FOREIGN.

CURRENTS, GOOSEBERRIES, RASPBERRIES, BLACKBERRIES, STRAWBERRIES, &c., &c.

The collection of fruits cultivated is extensive, and embraces all the different varieties that have been found of value, as well as those of late introduction.

The ornamental department is also extensive, consisting of Shade Trees, Shrubs, Roses, Hardy Herbaceous Plants, &c., &c., with a fine collection of Evergreens.

## LARGE TREES

FOR

### STREET PLANTING,

can be supplied, as also Evergreens, and Deciduous Plants for Hedges.

All the above are of FIRST QUALITY. Packing for a distance carefully performed by experienced hands.

All orders by post or left at the Nursery, will have prompt attention.

Catalogues forwarded gratis on receipt of one cent. stamps.

Address

GEORGE LESLIE.

Toronto Nurseries.

Toronto.

TORONTO NURSERIES,  
April 1862.

**Seeds! Seeds!! Seeds!!!**

JOHN GEORGE WAITE

181 High Holborn, London, England.

HAS THE LARGEST STOCK OF VEGETABLE, AGRICULTURAL, and FLOWER SEEDS, IN THE WORLD, and can supply dealers on better terms than any other whole sale house, as he makes most extensive arrangements with none but experienced growers to produce his supply of seeds, which are raised and grown from stock selected under his own personal superintendence, and as they are all cleaned and picked in his own extensive warehouses by an auxiliary strength of several hundred men and women, kept for that purpose, he is enabled to recommend, with the greatest confidence, every description of Seed offered by him for sale, and he therefore invites Seed Dealers to apply for his Catalogue.

TERMS—Cash, or satisfactory reference in England.

March, 1862.

6t.

## Fresh Garden, Field, & Flower Seeds.

FOR SPRING SOWING.

JAMES FLEMING & Co, Seedsmen to the Agricultural Association of Upper Canada, beg to inform their friends, and the Farmers of Canada generally, that their stock of Fresh Seeds is now complete and very extensive, embracing almost every kind of seed suitable for the country. The stock of Agricultural Seeds is large and well selected. The vitality of each sort is carefully tested, and their genuineness may be fully relied upon. A large stock of Peas, Timothy, and Clover:

Spring Tares,

" Wheat,

Black and White Oats.

Swede Turnips, Purple top.

" " Green top.

" " Laing's Improved.

" " Skirving's Improved.

White Globe Turnip.

Yellow Aberdeen "

" Altringham "

Waite's Eclipse Turnip.

Stubble or Six Weeks "

Mangel, Long Red.

" Long Yellow.

" Yellow Globe.

" Red Globe.

" New Olive Shaped.

Sugar Beet.

Field Peas, several varieties

Marrowfats, " "

Barley, two and four rowed.

Buckwheat.

Indian Corn, several varieties

Alsike and White Clover.

American Orchard Grass.

Kentucky Blue Grass.

English Rye Grass.

French Lucern.

Cow and Rib Grass.

Carrot, White Belgian.

" Long Orange.

" Altringham.

Parsnip, Hollow Crowned.

&c., &c., &c.

Also a full and general assortment of all kinds of Garden Seeds: a Catalogue of which, with directions for sowing, can be had on application. Agricultural Societies ordering Seeds, will be supplied on liberal terms. Country Merchants supplied with complete assortments of Garden Seeds on Commission, neatly put up in boxes of 200 papers each, for retailing at five cents a paper. Also a large assortment of Flower Seeds, embracing the novelties of the season.

No. 126 Yonge Street, Toronto.

March, 1862.

4-t.

## VETERINARY SURGEON.

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

## The Imported Thorough-Bred Horse. "Charon"

**W**ILL stand for Mares, at Mr. St George's Farm, Second Concession, and travel as follows, from 1st May: He will leave his own stable on Monday at noon, proceeding down Yonge Street and stopping as required. Will remain at Steele's Tavern all night, will go on to Toronto on Tuesday morning, and stop till Wednesday at noon at Bond's Livery Stables. Will proceed to Weston, and stop there all night; return home on Friday, by Yonge Street; will remain all night at Steele's Tavern, and arrive at his own stable on Saturday morning.

CHARON is by "Archy," by "Camel," by "Whalebone," by "Waxy," by "Pot-s-o's," by "Eclipse," &c, &c. His dam, "Styx," was by "Defence," out of "Proserpine," &c. See Studd Book. Any one acquainted with the English Turf and Stud Book will see that there is not in America a better bred horse than Charon. His pedigree includes the most celebrated sires, and the most fashionable blood of England. Charon was in training for the Derby when he was purchased and brought to Canada. See Ruff's Guide.

TERMS: Season Mares, \$12; Single Leap, \$8; Thorough bred, \$20, and \$12, single leap; Groom's fee, 50 cents.

Mares will be taken into pasture, and carefully attended to on Moderate Terms.

Address H. Q. St. George, Esq, Oakridges Post Office.

Oakridges, April 17, 1862.

## FOR SALE.

**A** LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Cochmor, Galt P. O., Oct. 19, 1861.

## Contents of this Number.

|                                                                                                              | PAGE. |
|--------------------------------------------------------------------------------------------------------------|-------|
| The Farm, a Chemical Manufactory.....                                                                        | 257   |
| Plaster with Manure.....                                                                                     | 259   |
| Condiments.....                                                                                              | 259   |
| Provincial Exhibition, 1862, Rules and Regulations.....                                                      | 263   |
| Rules and Regulations, Prize List.....                                                                       | 266   |
| HORTICULTURAL:                                                                                               |       |
| Trees injured by mice.....                                                                                   | 261   |
| On Foliage Plants.....                                                                                       | 262   |
| MISCELLANEOUS:                                                                                               |       |
| Collections of Natural History, Intemperance in Thinking, Animals destroying each other.....                 | 283   |
| Covent Garden Market, The Ettrick Shepherd's Dog, The Colonies of Great Britain, Substitute for Leather..... | 284   |
| Altitude and Dimensions of Lakes.....                                                                        | 285   |
| EDITORIAL NOTICES, &c.....                                                                                   | 285   |

THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars. Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
**Canadian Agriculturist,**

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA

VOL. XIV.

TORONTO, MAY 16, 1862.

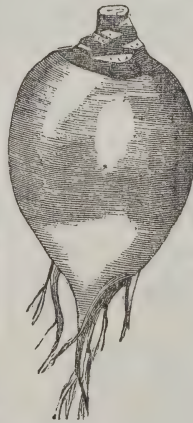
No. 10.

**The Swedish Turnip.**

The introduction of the Turnip as a field crop into Great Britain constituted a new and important era in her agricultural history. More sheep and cattle, and those of improved quality were maintained, more manure therefore produced, and, as a consequence, the grain crops received a proportionate increase. The same results have obtained in Canada, wherever turnip and root culture has become established; for as a general rule it will be found that in those districts where the raising of root crops has not yet found its way, cattle in particular, are not only small in number but especially inferior in point of quality.

The whole class of what are designated *Swedish turnips*, are characterised by certain distinctive features and qualities, which broadly distinguish them from the white or common field turnip. The colour of their leaves is invariably of a darker green, almost approaching to blue; the root is also more solid, and possesses a higher specific gravity. They grow more slowly, require better land in higher condition; and are better able than common turnips to resist severe frosts. They contain less water in their composition, and are proportionally more nutritious. They are also more fattening than milk-producing, and less laxative than common turnips. Twenty tons of good Swedes are considered to contain as much nutritive matter as twenty-five tons of the average

of yellow turnips, or as thirty tons of the average of white turnips.



*The common purple top Swede*, is an old variety, hardy, solid, and of good quality, and it has always been regarded as well adapted to the climate and soil of this country. This is probably the parent stock from which others have sprung. It is distinguished from the other "purple tops," by the dull red colour of the upper part of the bulb. It is very solid in texture,

not apt to run to seed, and particularly suited to strong, deep soils. It grows deep in the ground, and the crop consequently appears to the superficial observer to be less than it really is, while the case is reversed with the improved variety. The annexed sketch (fig. 1.) presents a correct view of the shape and appearance of this old and much approved variety.

Mr. Skirving of Liverpool, (England) has distinguished himself in raising new and improved varieties of the Swede; his *Improved Purple Top* has attained to a high reputation, and is more or less cultivated wherever Swedish turnips are grown.

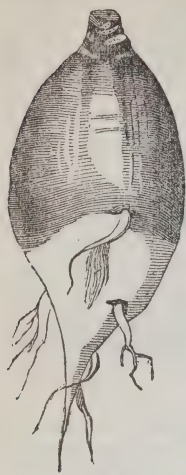
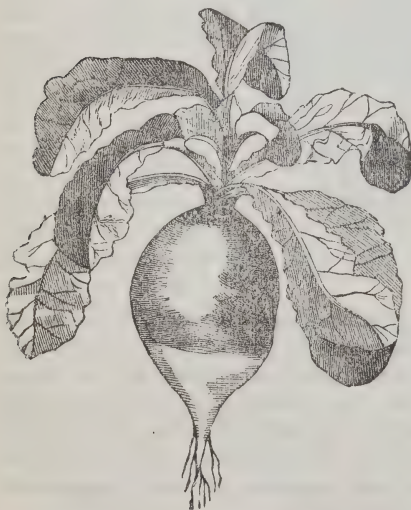


Fig. 2.

ties of Swedes, in consequence of the slight hold it requires of the ground; and in the latter, it swells out on the surface, and when lifted there is not such an adhesion of earth as with the deeper seated roots; a circumstance of great advantage in a wet season.

*Laing's Improved Purple-top Swede.*



(Fig. 3.)

In Lawson's *Agriculturist's Manual* the author says of this turnip, "that it differs from all hitherto known varieties of swedish turnips, in having large cabbage-like leaves, which, by their

horizontal growth, form a thick covering to the soil, thereby materially checking the vigour of autumnal weeds." This peculiarity of shape will be seen in the annexed cut, (fig. 3) where both the leaves and bulb are seen in their natural condition. We have seen excellent crops of this variety raised in Canada, but we question whether for ordinary field culture it is equal to the common or Skirving's Improved Purple-top; certainly it will not yield so large a weight. Of all the class of Swedish turnips *Laing's Improved* is unquestionably the best suited for domestic use. Its size, form and quality admirably adapt it for the table, and it should therefore be preferred by market gardeners to all other sorts of Swedes. *Matson's Swede* somewhat resembles *Laing's* in its mode of growth, being remarkably neat and trim in its appearance; both grow late in the fall, and consequently are not so well adapted to a climate like ours, so peculiarly subject to early autumnal frosts. Both these sorts have been found quite hardy, good keepers, and but little liable to run to seed. This latter circumstance, by the way, greatly depends on purity and change of seed, good cultivation, and the character of the season.—The *Green top Swede* is considered to be one of the oldest varieties, and had formerly a high reputation, which Lawson considers it would have maintained—had the same care been given to its cultivation and the selection of roots grown for seed, as have been devoted to the Purple-tops.

The following table is compiled from the results obtained by the writer of the article on Turnips in *Morton's Cyclopaedia*, in experimenting on the growth of different varieties of Swedes, in 1848. The land on which they were grown is a good black *trap* soil, dry and easy to work. The foregoing crop was oats, after clover and rye-grass cut once and then pastured. The manure for the turnip crop consisted of sixteen double cart-loads of well-rotted compost, (straw, yard dung and rich mud) per acre, and in addition, from four to five bushels of bone-powder were strewed in the drills above the dung. The seed was sown on raised drills, at the rate of 3 lbs. per acre; the young plants all braided well, were thinned about the 30th of June, and the crop raised in the end of October.



## NAME OF VARIETY.

Produce per imperial acre of clean bulbs.

tons. cwt. qrs. lbs

|                                 |    |    |   |    |
|---------------------------------|----|----|---|----|
| Common Purple Top Yellow Swede, | 22 | 11 | 2 | 24 |
| Skirving's Improved do          | 19 | 15 | 0 | 1  |
| Fettercairn Purple Top do       | 18 | 7  | 1 | 8  |
| Laing's do do                   | 14 | 0  | 1 | 5  |
| Common Green Top do             | 21 | 12 | 0 | 16 |
| Fettercairn's do do             | 14 | 16 | 1 | 8  |
| Green Top White Swede           | 14 | 8  | 3 | 18 |
| Purple Top do do                | 16 | 13 | 1 | 13 |

The two latter varieties are described as being of inferior quality, many of these bulbs being principally composed of their roots and matted fibres, and the weights in the table above for these two sorts are probably higher than they should have been, in consequence of the practical difficulty experienced in cutting the roots and fibres away from the bulbs. All the other varieties were of excellent quality.

Although the climate of the British Islands is from its moisture and absence of excessive heat much better adapted to turnip culture than Canada, yet we have seen in this country heavier crops than are indicated in the preceding table. From 800 to 1000 bushels per acre was no uncommon thing to meet with on the farms of those engaged in the turnip competitions that so materially tended to give an impetus to this department of Canadian husbandry during the last few years. A Thorough preparation of the soil, judicious manuring, with a plentiful application of pure seed from proved stocks, and proper after culture, will in general secure a good, paying crop of turnips here as well as in the old country. The root competitions to which we have referred, show indisputably the valuable results which may be obtained in Canada by a vigorous application of the proper means. Our advice is, in turnip and root culture particularly, to attempt no larger a surface than can be managed in the most thorough and perfect manner.

### Flax Culture.

MESSIEURS EDITORS. Is there any way that one of the six Flax Cleaning machines, coming from Belfast to Canada West, could be located in Prince Edward County. Our county is not famed for flax culture, for although I have repeatedly shown samples of flax and seed at our Society Show the judges, (except one trifling 25 cents,) never allowed me any credit for it. I cultivated flax in the North of Ireland for the

Belfast market for twenty years, and knowing the value of the seed for calves raised less or more for the last twenty years in this country for the seed alone. I have never been able to get machinery to clean the fibre; it would not cost over \$60 or \$70 to make the rollers and shaft, with the scutching handles made to be attached to and driven by a horse power of a threshing machine. I am well acquainted with all the processes it has to undergo, except the steaming, which may be preferable to watering, especially in this changeable and extreme climate. The best flax I ever raised in Canada I got nicely watered, and then lost it by three days of warm moist weather. It is more ticklesome to gauge in watering and grassing here than in the North of Ireland, some more to weed and pull, and in an average of years about four inches shorter. These are the drawbacks; but on the other hand the cheapness of the land in Canada may make it as remunerative to grow here as there, and if so, I am sure it will pay better than wheat, if we only get the machinery in operation to dress it well. No one should sow it on new land. It needs to be as near one length as possible, therefore the soil needs to have been thoroughly wrought, moderately rich and clean. My seed has got foul with yellow top, if you can get a barrel of good seed sent to Picton before the first of May, with a good prospect of means of clean fibre, please do so, and oblige,

SAMUEL ANDERSON.

Picton, April 14th, 1862.

[As our correspondent is not far from Kingston he will probably be able to take advantage in some way of the scutching mill placed at that city by the government.—EDS.]

### Cure for Turnip Fly.

No. 1. Recommended by Mr. Fisher Hobbs to the Royal Agricultural Society of England.

Take 1 bushel of fresh white ashes, or Fine wood ashes may be used instead of gas ashes.

1 bushel of fresh lime from the kiln.

6 lbs. of sulphur.

10 do of soot well mixed together, and got to as fine a powder as possible, so that it may adhere to the young plant. The above is sufficient for two acres when drilled at 27 inches, to be applied early in the morning when the dew is on the leaf, with a broadcast machine or sprinkled with the hand carefully over the rows. If the fly continue troublesome the process should be repeated, always when the plant is damp. In light land it is best to make the drills on the flat, the ground being well prepared to receive the seed.

No. 2. Another remedy by the same.

Take 14 lbs of sulphur.

1 bushel of fresh lime.

2 do of road scrapings, or a substance of good

mould where road scrapings cannot be obtained, per acre, mixed together a few days before it is used, applied very early in the morning, or *late* at night; in the same manner as directed in No. 1. using the horse hoe immediately after.

J. B. M.

### Dairy Management, and the Cultivation of Mangel Wurzel.

We take the following abridgment of the proceedings of two important Societies connected with Agriculture in London, from the *Irish Farmers' Gazette* of April 19<sup>th</sup>, and which will be found to contain much useful information of general interest and application.—

Those circles of the agricultural world which have their centre in London had last week a more than usual amount of pleasurable excitement, arising from the discussion of subjects connected with their profession. The ordinary monthly meeting of the Central Farmers' Club took place under the presidency of Mr. Charles Howard, on Monday, the 7<sup>th</sup>, inst., at which Mr. Dumbrell, of Ditchling, Sussex, introduced the subject of "Dairy Management;" and at the weekly meeting of the Royal Agricultural Society, Mr. Freere, Editor of the Society's *Journal*, opened the way for some tolerably useful remarks on the cultivation of mangel wurzel; both very seasonable subjects, and, in the case of the Central Club, possessing furthermore the merit of novelty, nothing immediately relating to it having been previously brought before the club. Professor Voelcker, indeed, as our readers are aware, had recently, at a meeting of the Royal Agricultural Society, expressed his views as a scientific man on the subject, but it remained for the central to pronounce upon its practical bearings.

In doing so, however, it was chiefly the milking properties of certain breeds, and the best manner of feeding milch cows, which were discussed upon; whilst the actual manufacture of dairy products—butter and cheese—was very slightly attended to. Now, in a discussion on dairy management, this was almost like acting the play of Hamlet without the part of Hamlet; for, surely, the manufacture of butter and cheese form a most important part of the circle of subjects which may be comprised under the general head of dairy management. We confess therefore, feeling somewhat disappointed; because, when we found the subject named as one which would be brought forward at a meeting of the Central Club, we hoped to have the pleasure of reading the experience of some practical speakers from the best dairy districts. And, assuredly, the extraordinary difference which exists in the qualities of each of these products of the dairy would have afforded ample room for in-

quiry; some qualities of butter being positive luxuries, whilst others are not good enough to grease a cart wheel; and then there are the rich, mellow English cheeses, which actually melt in the mouth, and, on the other hand, those hard, horny, kinds which might serve as wheels for wheel-barrows, but as an article of food are like the celebrated skim-milk cheese of Suffolk, of which it has been said that it "was so hard, that the pigs grunt at it; dogs bark at it; but neither of them dare bite it."

With reference to the milking properties of the different breeds, Mr. Dumbrell was in favour of the Channel Islands or so called Alderney cow as the best for butter-making, ranking the Ayrshire next, and recommending a cross between these two breeds as producing a very valuable animal. Mr. Little of Wilts, coming from a cheese-making district, advocated the short-horn, believing that "nothing looked better or more promising than a fine herd of short-horns feeding in the open pasture. Mr. Ellis, of Guildford, another short-horn advocate, would "venture to say," in opposition to Mr. Dumbrell's opinion of the Alderneys, "that there were other breeds which, taken as a whole, would be found equal, if not superior, to the Channel Island breed for the purpose under consideration," having "know some cows of the Ayrshire breed which were, in his opinion, more profitable on the whole than the Channel Islands cow." He considered that the first cross between the short-horn and the Channel Islands cow produced a very useful animal for dairy purposes, although, perhaps, it might not "give so much butter as a pure Alderney it was very profitable, arriving early at maturity, and having many good points belonging to the short-horn breed." Mr. Coleman had found that a herd of sixty or seventy Hereford cows did not produce enough of butter and cream to supply the large demand for these articles at Woburn, the Duke of Bedford's seat, where Mr. Coleman is farm manager, and he now keeps a herd of Herefords for breeding or suckling purposes, and another herd, polled Suffolks, on account of their yielding an immense quantity of milk. He had found that crosses between the Hereford and Ayrshire and Hereford and Alderney "improved the feeling qualities of both the Alderney and Ayrshire, while it did not much affect their milking qualities." With respect to the short-horn, he allowed that no breed had a greater tendency to fatten, but in their case "it often happened that the better the pasture the smaller the quantity of milk." Mr. Middleton, Outtleslowe, Oxford, who had kept the best kind of common cows in the midland counties at one time gave his experience of pure short-horns as dairy cows in the following terms:—

"About sixteen or seventeen years ago he considered whether he could not do better by purchasing some pure-bred animals, and then



breeding from them. Accordingly he bought five heifers of Collings' blood (the parent stock of Bates and Booth), and has since bred exclusively from them, and treated them as common cows up to the present day, from time to time purchasing first-class bulls to use with them, and then rearing their calves upon skimmed milk; and he believed that they gave as much milk and butter upon fair treatment as the common cow, but perhaps did not hold it quite so long when they got near calving time. As a set off against that, he sold his bull calves at 6 or 7 guineas, at 10 or 12 days old, and some at a higher figure, to farmers and others; and the result was that he, in conjunction with a few of his neighbours, who have partially adopted this practice, had been the means of improving the breed among the farmers; in fact, the whole of his neighborhood was tolerably well off for good bulls. His own opinion was that the short-horn was not only the best dairy cow, but also after she was dried and barren, the best grazing cow into the bargain, and that the better they are bred the better they feed; and we have Professor Voelcker's experiments in corroboration of the fact that pure-bred short-horns yielded as much milk and butter, within a fraction, as the common cow. In conclusion, he remarked that in advocating the claims of the pure-bred short-horn cow as a dairy cow, he did not intend it as an advertisement, to his herd of short-horns, because they were milkers as well as graziers, but for the simple fact that the Alderneys had been put forward as the best dairy cow; and also to disprove the allegation in the *Mark Lane Express*, a week or two back, that 'pedigree animals are just now getting into bad odour,' because some people will stuff, pamper, and spoil valuable breeding animals for the purpose of exhibition."

This is just such language as we would expect Mr. Tynte, of Tynte Park, to use, were he called upon to speak of the best description of cows for dairy purposes; keeping, as he does, a large herd of high-bred cows solely for the dairy and finding it profitable to do so. In one point, however, we think Mr. Tynte would not agree with Mr. Middleton, namely, that short-horns, perhaps, do not hold their milk quite so long as "the common cows" when near calving time; for the Tynte Park short-horns are not only profitable milkers, but some of the highest bred of the cows, of Booth blood, scarcely ever become dry.

Referring to his system of keeping mich cows, Mr. Dumbrell asked the meeting to forgive him if, on this part of his subject, he should "mount a hobby." His system consists in tethering his cows during summer, instead of allowing them to range over the pasture. The cows are staked down at equal distances, each animal having a range of 16 feet. They are moved frequently, often 12 or fourteen times a day when the grass

is short, only a small portion being given at each time, not more than twelve or eighteen inches, the object being to prevent the cows from placing their feet at any time upon the grass they are about to eat, so as to avoid waste. The cows have water twice a day, and he finds that 8 or 10 statute acres of fair meadow land, pastured in this manner, are generally sufficient "for 25 cows from the time they leave the stall until after haymaking." During summer, when the flies are troublesome, they are tethered only at night, getting rye, vetches, and clover in their stalls under cover during the day. Towards the end of autumn, as the weather becomes cold and wet, the cows must be taken into the stables at night, "lying out in wet weather being detrimental in every way to dairy stock, but no weather," he says, and let our readers in the dairy district mark his words—"no weather is so injurious to the produce of milk, besides being likely to cause abortion or slinking, as white frosts, and the greatest care should be taken that cows in calf should not feed out at that time." Mr. Dumbrell spoke of the merits of the drumhead cabbage as food for milch cows during the early part of winter, being highly nutritious, and assisting the colour of the butter; he follows the use of it with that of swedes, then mangels, spring rape or late sown turnips with rye, bringing the cows on until the grass is ready for a renewal of the tethering system. Of that system he has had 18 years' experience, and although much ridiculed at first, is now adopted by many of his neighbours.—One of these, Mr. Wood, spoke highly in favour of Mr. Dumbrell's mode of tethering cows, stating although at one time he had a very poor opinion of it, experience had made him quite a convert. The other speakers, however, were not inclined to follow his example and become converts to the system, although some of them allowed that it might answer in the case of cows of the Channel Islands breed, which were brought up to it as calves.

Mr. Dumbrell had not found the use of artificial food, such as oil-cake, meal, grains, profitable, but others said they used it regularly, and found that they were paid by the use of it; Mr. Coleman even stating that very few who kept a dairy, "whether of short-horns, Herefords, Alderneys, or any other breed, could supply really good butter without a small portion of one of those articles, viz, cake or meal.

With regard to the indoor management of the dairy, Mr. Dumbrell recommended that a sustained temperature of 56 degrees should be kept up during winter, by means of hot-water pipes; that the milk pans should be of tin, oblong, with rounded corners; that "butter to be perfect should be churned every day," that the cream should not be in a state of decomposition before being churned; that scrupulous cleanliness be attended to in every part of the management;

and that in order to produce good butter there should be a succession of fresh calving cows.

Such were some of the principal points attended to in the course of the evening; but before closing this section of our subject, there were some remarks made both by Mr. Coleman and the chairman which we cannot refrain from giving. Mr. Coleman said "that very few farmers paid people properly to look after the dairy;" that "unless the whole system of a farm were dairying, the work seemed never to be done in a proper manner, and hence it was that the dairy was so much abused and so frequently giving up;" and the chairman, Mr. C. Howard, referring to the great point upon which successful dairy management hinges, said:—

"Speaking as a tenant farmer, he would observe that the successful management of a dairy depended very much upon the ladies of the establishment. They might buy the best cows for milk that they could possibly obtain, and might also feed them with the very best description of food, but if the eye of the mistress was not directed to the dairy, very little good would be accomplished. On his talking over this matter with an old fashioned friend of his some time since, and asking him what system was pursued in his parish, his friend remarked, "There is very little dairying now—we have no dairy ladies." Now, he (the chairman) was at a loss to conceive how it could be beneath any young lady whose lot had been cast in a farmhouse, to notice the dairy. There was no more necessity for her in the dairy than there was for the husband on the farm to perform menial duties; but it was highly desirable that the mistress should have a practical acquaintance with and devote some attention to its management."

We omit the numerous and hearty "Hear, hears" with which these remarks were met; but, whilst they show that dairy farming is an occupation in which determined bachelors should not engage, they also show that a farmer's wife or daughter will never be demeaned in the estimation of sensible people when they take an active part in the management of what is really their particular department. And for the opinion of any other class of people farm-house ladies should not care "two rods of pins."

We now turn to the proceedings at the weekly meeting of the Royal Agricultural Society, where the cultivation of mangel wurzel was discussed. Mr. Freere had made what he termed "a slight experiment" to ascertain the comparative value of "Lawson's artificial guano" and ordinary Peruvian guano as manures for mangel. The season proved unfavourable, and the weight of the crop obtained only ranged from about 15 tons to 22 tons per acre. This "slight experiment" did not, therefore, afford information of any practical value, and the rambling and somewhat incoherent remarks with which he followed up his statement were equally devoid of interest.

Mr. Holland, M.P., was in favour of autumn instead of spring manuring for mangel, evidently referring to the use of long farm-yard dung; and alluded to experiments reported by the late Mr. Pusey, in an early number of the society's *Journal*, when the inference drawn was "that it is more profitable to use some artificial manures in conjunction with dung" in mangel cultivation "than to use either singly."

Mr. Cantrell had grown mangels on the same piece of land four years in succession, giving the land a slight dressing every year, "and every year the roots increased in size." Mr. Peel had grown mangels six years in succession, obtaining good crops all the time, and a friend of his had even "grown mangel on the same piece of land for 17 years in succession, and that land is now being sown with mangel again."

The Chairman, Sir Edward Kerrison, M.P., brought forward reports of two sets of experiments in mangel cultivation, which had been made by his farm bailiff, Mr. Horn, the one in 1856, and the other in 1860; and as those experiments are of considerable practical value, we gave them in full for the benefit of our readers:—

#### EXPERIMENTS IN 1856.

The following experiments were conducted on a poor gravelly soil, in order to ascertain the effects of artificials applied loosely on each. Crop sown the 21st of May, and raised the 12th of November, 1856:—

| No  | Manures per Acre.                                                                                                     | Produce.<br>tons cwt |
|-----|-----------------------------------------------------------------------------------------------------------------------|----------------------|
| 1.  | 20 loads well-prepared stable dung,<br>and 4 cwt. of guano                                                            | 23 16                |
| 2.  | 20 loads well-prepared stable dung,<br>4 cwt. of guano, and 5 cwt.<br>of salt                                         | 30 12                |
| 3.  | 20 loads well-prepared stable dung,<br>1 cwt. of guano, 1 cwt. superphosphate,<br>1 cwt. blood manure and 1 cwt. salt | 25 10                |
| 4.  | 40 loads of dung                                                                                                      | 21 3                 |
| 5.  | 2 cwt. guano, 2 cwt. superphosphate,<br>2 cwt. of blood manure, and 2 cwt. salt                                       | 20 6                 |
| 6.  | 7½ cwt. guano                                                                                                         | 17 17                |
| 7.  | 12 cwt. superphosphate (Lawes')                                                                                       | 14 19                |
| 8.  | 13 cwt. blood manure                                                                                                  | 15 6                 |
| 9.  | 1½ cwt. guano, 1½ cwt. superphosphate,<br>1½ cwt. blood manure, and 1½ cwt. salt                                      | 19 11                |
| 10. | 5 cwt. guano                                                                                                          | 12 15                |
| 11. | 8 cwt. superphosphate                                                                                                 | 11 18                |
| 12. | 8 cwt. blood manure                                                                                                   | 12 11                |

This shows most distinctly, as has been described by different speakers to day, that a combination of farm-yard manure with some species of artificial manure is generally the best method of obtaining the greatest amount of mangel.



## EXPERIMENTS IN 1860.

The following experiments were conducted on the crops of 1860, in order to ascertain which manures raise the greatest weight per acre of mangel, in conjunction with farm-yard dung. Field, a light soil; seed drilled on 27-inch ridges first week in May. Dung applied in the ridges at the time of sowing; the artificials sown by hand over the dung to ensure equal distribution. Crop stored in the second week of October.

| No. | Manure per Acre.                                                                | Produce. |      |
|-----|---------------------------------------------------------------------------------|----------|------|
|     |                                                                                 | tons     | cwt. |
| 1.  | 20 cart-loads of good dung.....                                                 | 16       | 4    |
| 2.  | 20 cart-loads of good dung, 2 cwt. guano, and 4 cwt salt.....                   | 28       | 14   |
| 3.  | 20 cart-loads of dung, 5 cwt. blood and bone manure, and 4 cwt. salt.....       | 24       | 9    |
| 4.  | 20 cart-loads of good dung and 2 cwt. guano.....                                | 21       | 15   |
| 5.  | 20 cart-loads of good dung, 4 cwt. superphosphate, and 4 cwt salt.....          | 22       | 10   |
| 6.  | 20 cart-loads of good dung and 4 cwt. salt.....                                 | 20       | 4    |
| 7.  | 20 cart-loads of good and 4 cwt Lawes's superphosphate.....                     | 18       | 10   |
| 8.  | 20 cart-loads of good dung, 4 cwt. Lawes's superphosphate, and 4 cwt. salt..... | 21       | 10   |

The advantage of using salt in mangel cultivation is clearly shown by these experiments, the application of 4 cwt. or 5 cwt. per statute acre resulting in an addition of from 4 to 7 tons in the weight of the crop. Sir Edward's crops are drilled at 27 inches, but Mr. Peel began with that width, and then got to 30 inches, which he found too small; extending the width, therefore, to 32 and finally to 36 inches, believing that if it is wished to grow roots weighing 16 or 18 lbs. each, they cannot be developed to that size in rows of much less than three feet apart.

Such were some of the principal points brought out in the discussion, and we cannot avoid congratulating the society on the success which has already attended the open weekly meetings. Ample encouragement has been given for persevering in the course recently adopted; for although the peg on which the discussion may hang, as in this case, may not be itself of much value, yet it serves to draw out the results of experience from all parts of the country, and that is of importance.

### Straw as Food.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

It is only in modern days that the value of straw has been fairly estimated. As long as our ancestors were content to feed their live stock in yards—that were strictly straw yards—or winter

them in cold impoverished pastures, straw was valued merely as a means of affording a bare subsistence, during the dreary months of winter, to the half-starved inmates of the homesteads. The dung thus produced was of necessity poor, for the days of oil cake had not arrived: artificial food was then rarely thought of: although everything was sold *off* the farm, nothing was returned to it; in fact, if nature, had not helped the farmer in a way he never even suspected, his soil would have been in time utterly exhausted. All that the tiller of our soils then knew was, that when his fields became so impoverished by growing continued crops of the cereals, that these ceased to be remunerative, he had only to leave them for some years to grow a crop of either the self-sown grasses, or those produced by sprinkling the seeds from his hayloft over the land. In this way he used to say that “the land gets *rested*.” He never suspected that, during this resting, as he unmeaningly called it, the soil and the grasses were slowly absorbing from the atmosphere its carbon and its ammonia, and enriching the soil with organic matters, which gradually became sufficient in amount to again support, for a season or two, crops of corn.

When, however, root crops were introduced into the field, and oilcake into our homesteads, then began to be properly appreciated the real use of straw, as a nutritive substance. It is true that the best admixture of these is not always carefully ascertained. A capital lecture on this subject, observes Mr. J. C. Morton, in his valuable edition of “Young Farmers’ Calendar,” was lately given by Mr. Blundell, of Bursledon, before a Hampshire Farmers’ Club. As he truly enough remarked, straw must be more valuable as a feeding material than when used for littering the pens of animals; but to make it so, it must be consumed with roots, oilcake, meal, and other feeding materials. He found that dairy cows in the winter months, if fed on large quantities of roots, particularly mangolds and carrots, refuse to eat straw almost entirely, and become very lean; but they will always eat a full portion of sweet well-harvested straw, when they get a moderate allowance of roots—say, for an ordinary-sized cow, 15lbs. of mangold three times a day, the roots being given whole, just in the state they come from the store heap. Again, calves and yearlings, being fed roots in the same way, will eat a large quantity of straw; and when they have been kept under cover, I have had them in first-rate condition for many years past. Also, fattening beasts, when they get a fair allowance of roots, say 65 to 70 lbs. per day, with from 3 to 4 lbs. of cake or meal in admixture, will then eat straw with great avidity, and do well and profitably. It is however often the case that bullocks receive 100 lbs. or upwards of roots per day, with a large quantity of cake or meal, often 10 or 12 lbs. each per day. They will then not look at straw, and are obliged to be fed with hay. The result of this is, that the cost

price of these quantities and kinds of food is so considerable, that the animals do not yield a profit to their owner.

The amount of straw consumed by stock, and its nutritive properties, have for some time engaged the attention of the Council of the Royal Agricultural Society. In the twenty first volume of its Journal, p. 94, is given the prize essay of Mr. H. Evershed, on the uses of straw on a farm. Its author is of opinion that, although it is a common plan in grazing districts, where roots are scarce, to feed store cattle on about 20 lbs. of straw and 3 lbs. of bean meal, yet that they do better on straw, with roots instead of meal, even when the supply of roots did not exceed  $\frac{1}{2}$  cwt. per head per day. Cattle wintered on straw and meal only become "hide bound," with staring coats. In a note upon this paper Mr. Frere calculates the average production of straw per acre to be  $2\frac{1}{2}$  tons, or 250 tons from 200 acres of corn. He reckons that not more than 4 cwt. of straw enters into the composition of a ton of farm-yard manure; the remainder being, excrements 6 cwt., rain-water 10 cwt. The composition of straw chaff by a cart-horse he places as at least one ton per annum; cattle, 1 ton 1 cwt. per annum; for sheep on a farm of 400 acres he assigns 8 tons of straw-chaff yearly. On an arable farm of 400 acres, therefore, Mr. Evershed calculates that there is required for the fodder of 50 head of large stock, whether horses or beasts, at least 50 tons; for sheep, 8 tons; for storing roots, when wheat is reaped, waste from thatching, making foundation of stacks, &c., say 5 tons; total 63 tons of straw.

As regards the quantity eaten by the stock, Mr. Evershed adds: "It is an interesting fact that well-fed cattle, kept in open yards, will eat more straw during the winter months than other cattle kept under the warm shelter of a roof. The careful manager saves his stock of bean straw until the cold weather sets in, knowing that at that season its bitter flavour will be disregarded. During the winter of 1859-60 I compared the quantity of mixed hay and straw chaff eaten by six oxen, fattened in a warm cattle-house, with that consumed by cattle of the same age and breed in an adjoining yard. Each lot was fed alike in respect of corn and roots, and as much chaff was given as they would eat. Those in the house ate 14 lbs. and the others 18 lbs. daily, showing a difference of nearly a fourth less carbonaceous food, required by cattle when kept in a condition of artificial warmth." In the experiments on fattening cattle at Woburn (*Jour. Roy. Ag. Soc.*, vol. xxii., p. 216), in six experiments, during eight weeks, on 44 oxen, fed in boxes, of an average weight of 1,470 lbs., there was consumed per head weekly about 431 lbs. of cake or corn, 110 $\frac{1}{2}$  lbs. of clover hay chaff, 377 lbs. of roots; in all 531 lbs. of food. There was used besides 133 lbs. of litter. Total feed and litter, 664 lbs. The amount of fresh

dung produced, 575 lbs. The dry substance of the dung was 156 lbs., that of the litter only 106 $\frac{1}{2}$  lbs.: there was therefore a gain of about 50 lbs., or nearly one-half, upon the litter used. The dry substance of the food and litter together was, however, 276 lbs., yielding in dung 156 lbs., or only 56 $\frac{1}{2}$  per cent. of the total; 43 $\frac{1}{2}$  per cent. of the dry substance of the food and litter were therefore either stored up as increase, expended by the animal in respiration, &c., or lost by the decomposition of the manure. To produce 1 ton of fresh box dung, there were consumed 168 lbs. of cake or corn, 431 lbs. of clover-hay chaff, and 1,496 lbs. of Swedes; in all 2,068 lbs. of food, besides 518 lbs. of litter, making a total of 2,586 lbs. of food and litter; this contained 1,075 lbs. of dry substance, and the ton of dung 608 lbs. but we must not fall into the common error of confounding together as food the straw of all kinds of cereals. Neither must we fail to consider the very material difference in value between the straw of the same grass, harvested at different stages of its growth, or in varying degrees of ripeness. These points Professor Voelcker, in his recent valuable paper on the composition and nutritive value of straw, has elaborately examined; as he observes (*Jour. Roy. Ag. Soc.*, vol. xxii., p. 382), "Many farmers form much too low an estimate of the feeding value of every kind of straw, except pea haulm. On the other hand, the views of others respecting the nutriment contained in straw are so unmistakably exaggerated that, with some degree of justice, they are made a laughing stock at the market-table. The main anxiety of the first-named class seemed to be how to tread into manure all the straw grown on the farm; that of the second how to stuff stock with all the straw at their disposal: the creed of the former being that neither little nor much will do their cattle any good, whilst the latter hold that any appropriation of it for litter is an intolerable waste.

"The intelligent agriculturist, however, knows full well that whilst wheat, oat, and barley straw when cut fine into chaff possess a certain feeding value, particularly when this bulky material is combined with some concentrated or more readily digestible food, they are not the less essential on the generality of farms to the production of good farm-yard manure. On most farms, indeed, the want of straw is felt much more on account of the difficulty of preserving the most valuable constituents of the liquid and solid excrements which arises from an insufficient supply of litter, than because an economical substitute of this kind of bulky food cannot be found."

But the professor feels evidently that there is much yet to be learnt with regard to the condition of the straw, the way in which it is produced, and its varying nutritive quality; for he adds, in his opening observations of its chemical com-



position, "As straw contains only from 14 to 17 per cent. of moisture, there is in it about as much solid matter as in meal and other kinds of dry food, although it is considered to be worth only from 20s. to 30s per ton.

"The bulk of straw, however, includes a large proportion of woody fibre, which, if digestible at all, is only partially assimilated in the system. Still, assuming that not more than one-third of the weight of straw is digested by cattle, and probably less by horses and sheep, and granting that the assimilable part is not food of the most nutritious character, straw will still have to be regarded as a more economical feeding material than any other which can be supplied. It is undoubtedly a fact that some practical feeders are in the possession of the secret of converting considerable quantity of straw into beef. What this secret is, perhaps, is not known to themselves. It may be that the combination in which straw is given, or the preparation to which it is submitted before it is placed in the feeding-troughs, has something to do with the success that attends its use; but it is yet more probable that on farms where straw is largely and economically cut into chaff and given to cattle, its condition, from early harvesting and other influences, is better than in other localities where the practice prevails of allowing corn to become over-ripe before it is cut. In consequence of this mischievous practice, straw gets more woody and less digestible than it would have been had the corn crop been cut earlier. Several analyses" of the Professor's, to which I shall presently refer, "show how much the composition and nutritive value of straw depend on the condition in which it is harvested. Indeed, the differences in the composition of somewhat under-ripe and over-ripe wheat or oat straw, are greater than the variations which may be noticed on comparing with each other the composition of wheat, oat, and barley straw. It would appear that in certain districts each variety in its turn becomes superior as food—each kind is preferred and exclusively retained for that purpose; whilst in other districts each is consumed for litter. Moreover, the natural preference shown by stock for one kind or the other affords a practical evidence that the farmer in each case may have a good reason for the choice which suits his locality. We must therefore always expect to meet with great diversity of opinion amongst practical men respecting the nutritive value of wheat, oat, and barley straw. That pea-haulm is too good to be trodden into manure is admitted by all. When properly got in, pea straw is, indeed, a valuable feed substance. With respect to the nutritive properties of bean stalks, again, great diversity of opinion prevails—some considering them almost as nutritious as clover hay, and others only fit for litter."—*Farmer's Magazine*.

(To be concluded in our next.)

## English Agriculture :

AS SEEN BY AN AMERICAN.

We find the following interesting sketch of English agriculture during winter and spring in the Chicago *Prairie Farmer*:

EDS. PRAIRIE FARMER:—The first impression of an American of English agricultural life is exceedingly interesting. No doubt it would be as much and more interesting for an Englishman to look for the first time upon an Illinois prairie in its state of nature, a sea of living green, and to look upon the same scene again in a state of cultivation, upon a field of corn of a thousand acres, inclosed by a pine board fence instead of the English hawthorn hedge.

The thought has occurred to me that I should like, now and then, to give you my impressions of rural and agricultural life in England, as they may first be formed and as I may mature them from after observations and more reliable information. There may be something profitable to be observed from the contrasts. Two such nations as England and the United States cannot thrive within the knowledge of each other, without furnishing profitable lessons from their respective experiences, if they are willing to take lessons in that way. There are certain ideas which each nation, from the nature of their circumstances, must more thoroughly work out; thus England understands better the use of coal and iron, the working of the mines, the art of pottery, &c., because they are within the range of the nation's calling. For the same reason we are ahead of the English in the use of timber, its manufacture from the tree in the forest to the last finish of it in the beautifully constructed house. England knows nothing of our magnificently constructed machinery, such as the saw mills of Saginaw and Green Bay, and the multitudinous inventions for planing and manufacturing of the lumber into doors and sash, mouldings, &c., simply because she has not the timber thus to manufacture. But she has led us in the tubular bridges, crystal palaces, and iron ships, simply because she has the iron and glass, and not the wood.

Thus in agriculture, England has been forced to the highest perfection of science, in the art of production, in order to wrench from the overpopulated soil the capacity to feed the people. The United States must more and more imitate her in this regard, not only to develop our productive capacities, but for the profit of labor as well. It has been the necessity of the case which has made the West call for the reaper and thrasher, and the grain elevating warehouses of Chicago. It was the necessity of the case, high price of labor and great demand for clothing, or the use of the needles, which called for the invention of the sewing machine in America. The low price of labor, the easy supply of the demand of the needle, from the poor women who

could earn their bread only by the interminable stitch, forbade that it should be discovered in England. But all these machines, having been invented and made available with us, are now slowly making their way into England.

It is well for the American to learn what he profitably can from English experience in farming. When we see how fast the capacity of the land in the West is running down, how uncertain almost all our crops are becoming; and when we see over what obstacles of climate, and upon the taxation of its fertility for past ages, with what abundance all crops are raised, and with what certainty they can be relied upon in England—it seems to me our Western farmers can learn these lessons too soon.

There is one fact that should always be remembered when we think of the English farmer—the high price of agricultural products here, and the necessity which compels the English farmer to make the most of his land—and that is, his land rent. Agricultural products are virtually taxed with a land rent, per acre from \$5 \$15 per year. What proportion of cultivators are actual land owners, I am not yet able to state, but I am told that most farmers are land renters, paying to the landlord an amount of rent of from one to three pounds, sometimes much more, according to the available and productive state of the land. Think of a farmer paying for rent, clean cash, as much as will buy him a farm in Illinois, each year! As an encouragement to the idea of the Western farmer sometime having a permanent market for his products in England, he must remember, as an offset to the freight—how much English farm products are encumbered by this enormous ground rent.

Now let me reproduce to the mind of the western Farmer the picture which English cultivation has produced upon my mind, from my first appearance here, the last month in autumn, up to the last in April—agriculture in winter, while in Illinois your ground has been hard with frost or covered with snow. The first surprise is in looking out upon the face of the country at any time in winter, to see grass and vegetation, excepting on the trees, in a perpetual green. This is in a latitude of  $51\frac{1}{2}$  degrees against 42 degrees in Illinois, (the latitude of Chicago,) or nearly 700 miles farther North. Bristol geographically ranges nearly with the latitude of the southern point of Hudson Bay, a locality so far north as to be thought worthless on the Western continent for any agricultural purposes. But on this continent, on an island surrounded by the modifying influences of the seas and oceans, the temperature is so mild that vegetation is in a semi-state of growth the year round.

Farm work is done here all through the winter. January is the great month for grain sowing; February the ground is prepared for root crops; March, the season for young vegetables; and, though this season is wet and backward, the farmers almost despairing, gardens

are blooming in green; the cabbage plants, cauliflowers, and the hundred and one kinds of “greens” making one think of Illinois Junes. The wheat fields are growing, yet badly affected by the wet; the grass is forward, (and oh! how beautifully green the fields look, and about the 15th of April, men were mowing one of the Bristol parks or squares, shearing a fleece of green down about two inches in length. In fields, gardens, and yards about the dwellings of the city, flowers of all hues and degrees of beauty, are putting forth their captivating appeals for admiration. Such is the difference of the state of seasons between the Eastern and Western Continents. I write this letter in the latter part of April; it will be read in Illinois in the latter part of May or first of June, six weeks later; and thus, let the reader fill the picture of contrast in his mind, of what you are then, and what was before us six weeks previously; and what has been the scenery before us the whole winter long. The ground has never frozen hard enough to freeze the turnip tops, or rob the old garden crops of last fall of the green life-like looks.

Perhaps sometime I may paint a picture of the rural scenery of England—and fill in some of the details of farm life, and how they do things here. Such a description may be in season at any time.

A few words as to the present state of farm work, must suffice for this first letter.

The season has been very wet, I am told. I judge so from the fact that it has rained almost every day since the first of December last. One man, boasting of the good weather of January, said they had fourteen fair days in the month, and that was an unparalleled streak of good weather. These fair days have been so unfair to me that I have not observed them. I really have no distant recollection of more than four or five fine days, and they all occurred in April. As the consequence of this wet, the prospect of the crops has been seriously damaged. Work was pretty much stopped on land, since the first of March, to the middle of April. The wheat plant is rank where the land is in a high state, now growing spindling and turning yellow from excessive moisture. In consequence of this, the farm interest took a panic, and the price of wheat came up, in view of the possibility of a failure. But recently there has been a favorable turn, a few of the good days have come; and last Sabbath, our good minister returned devout thanks for the cessation of the rains, and for the sight once more of the smiling sun. But yet, notwithstanding this apparent deluge, as you may think, I have not yet seen one hard rainy day, raining in earnest and done with it, as in America—but we have an excessively wet kind of rains, which will soak everything while it hardly seems to come down in drops.

The whole atmosphere is in a state of suspended superabundant moisture. Some would



say, it is weeping weather. Umbrellas are always in order—and it is a great perplexity to know when to carry them up, or when down. it would suit me better, if the weather was more positive, more rainy when it rains, and more fair when it is fair, which is the American style. But it has just occurred to me, that the weather was not made especially on my account.

Bristol, England, April 19.

Z. E.

### On the Aeration of soil.

By M. JEGER.

M. Daniel Hooibrenk, gardener at Heitzing, near Vienna, announced, in 1859, a new system of culture, stated to ensure a more vigorous growth than can be induced by any other means. This consists in placing in the earth pipes or air channels pierced with holes, which permit the air to penetrate throughout the mass of soil traversed by the roots. According to the inventor of this system, its advantages are numerous and important: he points out the following:

1. The strongest clay soils, under the influence of currents of air transmitted through the pipes, are divided by thousands of small fissures and thus rendered friable, so that roots can easily penetrate them. The depth at which the pipes should be laid depends on the nature and consistency of the soil.

2. After the soil has been aerated by means of the air-pipes, the vegetation of plants growing in it becomes more active, especially in the cases of grain crops and vegetables. The roots finding the soil in a finely divided state penetrate deeper than usual, and are consequently safe from the vicissitudes of temperature which take place near the surface.

3. The looseness produced by the circulation of air in the soil causes a rapid absorption of rain water, and prevents caking of the surface. On the other hand, during long-continued drought, the roots, owing to the great depth to which they have penetrated, are not exposed to the trying effects of the external air, and are enabled to obtain a supply of moisture which they could not do near the surface.

4. The air pipes passing through sour soil causes the sourness to disappear, so that where only bad herbage previously grew, the finer grasses can be produced. These good effects are more particularly observed in swampy or marshy ground, which may thus be changed into fertile soil.

5. The soil, being always kept porous by the circulation of the air, can be more easily worked; and from its openness preventing the accumulation of water, cultivation can be commenced earlier in spring.

6. Plants grown on soil thus improved produce a great mass of roots, and consequently,

being very strong, they require more space. There is no need to sow so thickly as usual; and hence a considerable saving of seed is effected.

7. Manures are much more energetic in their action in soil that is aerated in this way than in that which has not been so treated; the reason of this being, according to M. Hooibrenk, that the aerated soil is more uniformly moist throughout its thickness, and that being the case the decomposition of the fertilising substance is more rapid and uniform.

In short, the inventor of this system states that double and even triple the produce may be obtained from land so treated. This increase soon repays the expense of laying the air pipes. He also states that in the culture of the vine the ripening of the fruit is greatly accelerated, and the quality improved. Such assertions could not fail to be received with doubt by many. Careful experiments were therefore made to test their truth by Messrs. Fitchner & Son.

The field in which these experiments were conducted consists of a bed of loam or sandy clay (*argilosableuse*) from 13 to 16 inches deep, resting on a subsoil of rounded pebble-stones like those in an adjoining brook. On the other side of the field is another brook, about 6½ feet lower. This difference of level, taken in connection with the stony subsoil, made it doubtful at first whether the beneficial action of the air pipes would not be owing to their acting as drains in carrying off surplus water. The field contained rather more than 1½ acre, and had been in cultivation since 1852, but yielded only indifferent returns, at most about six to one of seed. Messrs. Fitchner placed four air pipes at the depth of 3 feet across the field. Their internal diameter was nearly 2½ inches. The field thus prepared was divided into a number of beds, at right angles to the direction of the air pipes, and extending to the portion of ground not furnished with the apparatus. Of the four pipes first laid down, two were joined by a communication pipe, and the mouth of one of them opened into the ash pit of a furnace, whilst the other extremity terminated in an air tank, the sides of which were of masonry.

The surface of ground furnished with air drainage was half an acre and 22 poles. The furnace at the end of the pipe was intended to show that the atmospheric air could reach the fire by passing through the soil. To prove this the opening at the further extremity of the pipe was completely closed, and also the furnace and ash-pit doors, in such a way that no air could reach the fire to support combustion except by passing through the soil under which the pipe leading to the furnace was buried. The fire, however, burned perfectly well throughout the day. To burn ten pounds of wood in 2½ hours would require 8,000 cubic feet of air, and this would have to traverse 108,000 lbs. of soil be-

fore it could reach the furnace. A similar circulation, though less active, must take place whenever there is a difference in the temperature of the air in the drains and that of the atmosphere, and from observations that have been made it has been found that a difference of this kind takes place at least once in 24 hours. M. Jäger remarks that wherever a furnace exists, its fire may be usefully employed in fertilizing by means of air tubes, the adjoining ground; and that gardeners might thus make good use of their hothouse furnaces for improving borders and other parts of their gardens.

The advantageous action of atmospheric air in passing through the soil is due to the fact of its losing a portion of its oxygen, and thus giving rise to the formation of a larger portion of carbonic acid. To determine the changes effected in these respects, Messrs. Fichtner have analysed the air contained in the tubes comparatively with that of the atmosphere. They found, after several days' uninterrupted heating by the furnace, during which time the circulation through the soil had been rapid, the air in the tubes had exactly the same composition as that of the atmosphere (21 per cent. of oxygen, and 79 of nitrogen), and contained in 10,000 parts 12.80 of carbonic acid. Two days after the fire was not kept up the air in the tubes had only 20.85 per cent. of oxygen, and contained 20.99 of carbonic acid in 1000 parts, and from four to six days after the fire was let out, they found 20.71 of oxygen and 35.72 of carbonic acid; six or eight days after, 20.08 per cent. of oxygen, and 35.73 per 1000 of carbonic acid. During these experiments they only found 4 parts of carbonic acid in 1000 of the air in the atmosphere.

The produce of the aerated soil, even taking into account the effect due to the working of the soil in laying the pipes, was considerably increased during the first and only year in which the results are known. A particular increase was observed in the yield of sugar beet. On the estate of Totis in Hungary, where similar experiments have been made, very encouraging results have been obtained. It is, however, impossible as yet to state anything precisely respecting them, and before we can draw conclusions we must wait till the experiments which are being made shall have been carried on for a sufficient length of time.—*Gardeners' Chronicle*.

### Warranty of Soundness in Horses.

The subject of warranty of soundness in horses is one which cannot fail to possess a peculiar interest to those of our readers who, either as agriculturists or sportsmen, are amongst the lovers of horse-flesh. The manner in which horse doctors differ on the important matter of soundness is illustrated at nearly every trial in which the question is involved, and is perhaps

as high an example as can be adduced of the unsatisfactory nature of professional evidence—not less striking even than that of the mad doctors themselves in the celebrated Windham lunacy-case. Mr. Litt, veterinary surgeon, has addressed to the editor of the *Edinburgh Veterinary Review* a long letter on the subject, in which he advocates with considerable boldness and spirit, as the only satisfactory solution of the difficulty, the entire abolition of the law of warranty. We give a few extracts:—

“A rather large experience of more than twenty years, during which I have had some not unfavourable opportunities for observation, has led to the conclusion that, so long as the present most absurd law and custom of warranty exist, so long will the evils that arise from them—the expensive law-suits, the contradictory professional swearing, and the injury and disgust which necessarily follow—continue to exist also. The great aim, then, it appears to me, of everybody who takes an interest in horse-flesh—lawyers excepted, of course—ought to be to seek to bring about the abolition of the law of warranty altogether. Everything that leads in this direction may be recognised as wise and serviceable; and I believe the effect of a thorough inquiry into the various bearings of the subject can scarcely fail to point to this conclusion. Not that I conceive any attempt to amend the law or the operation of the law as it stands much less than Quixotic, but simply because I consider that the more it is investigated, the more clearly will its injustice and its absurdity be made more apparent. Show how injurious is the law itself, and how unwise the custom of warranty, and something may probably be done towards their abolition; for it is in this alone, according to my view of the case, that we can reasonably look for any very manifest advantage to arise. I feel assured that no man having given a warranty is safe from injury. He has made himself amenable to a law, of all laws the most absurd and most unsatisfactory, and he has no right to be surprised if he should chance to reap the natural fruit of such a course. A very worthy man, whom I knew well some years since, a farmer, and at one time a large breeder of horses, understood these things so well, that when he sold a high-priced horse with a warranty he always put the money in the bank, and allowed it to remain six months without reckoning it to his account. If, at the expiration of that time, he heard no complaint of the animal, he then considered himself at liberty to make use of the money, but not sooner. By this means, and by making it a rule to request the immediate return of any horse that had been warranted by him, of which the slightest complaint was made, he managed to steer pretty clear of the law; and though he was once exposed to some annoyance and imposition, I am inclined to think this plan was a wise one, and I recommend all who can afford it,



under the like circumstances, to follow his example. The proverbial uncertainty of the law has unquestionably its highest illustrations in what are called horse causes. Looking back to my own observation and experience of such cases, and speaking necessarily with a peculiar knowledge of their merits, I have no hesitation in saying that the verdicts have been quite as often on the side of *wrong* as on that of *right*, and that, therefore, the law itself is as frequently, in its operation, productive of serious injury as of reasonable justice. This is no extravagant assertion, but a deliberate conviction at which I have been compelled to arrive on a mature consideration of facts. What is more, I always endeavour to force it on any one who may happen to consult me on a question of disputed soundness, and I am inclined to think not without effect; for, though I now examine more horses than I ever did, I have not been engaged in a case of this kind in any court of law for more than a twelve month. To feel that one is in the right is doubtless a very noble and very dignified sensation to entertain at any time; but woe be to the man who is foolish enough to fancy that in an action at law, and when the dispute is about the soundness of a horse, the question of right is likely to have the slightest weight in the decision. I believe he can nurse no greater delusion. For this is undeniable that the law itself is mainly to blame. All definitions of legal unsoundness are vague and imperfect, and admit of endless quibbling and dispute. Veterinary surgeons may differ in opinion; but what then? The authority of all the veterinary surgeons in the world will not weigh a single grain in the balance against the dictum of some famous lawyer, who whatever might have been his attainments in other respects, could have known absolutely nothing about the diseases of a horse."

Mr. Litt then goes on to illustrate his position by some cases in point, which will be better understood by professional than general readers. One of these is as follows:—

"Or take another instance—one of the last cases of the kind with which I have had anything to do. Some of the readers of the *Review* will perhaps remember it as that of *Drury v. Hopwood*. It was tried in London in 1860, and may be briefly explained as involving the much-vexed question of spavin or no spavin. The plaintiff purchased two horses in Liverpool, and took them afterwards to London, where he used them a few weeks without any particular cause of complaint. Being desirous of parting with them, however, they were offered to a dealer, who agreed to purchase them at a given price if Mr. Mavor passed them as sound. They were accordingly examined by Mr. Mavor, who declared them both to be *spavined and lame*, and they were, in consequence, returned to Liverpool. Here they were submitted by the

defendant to the examination of some of the highest veterinary authorities in the place—of Mr. Ellis, Mr. Lucas, and Mr. Bretherton, all of whom were of opinion that they were altogether *free from any appearance of spavin, and that they were quite sound*. Fortified by such opinions as these, the defendant refused to take the horses back, and they were again sent to London. In corroboration of Mr. Mavor's opinion, those of Mr. Field, Mr. Spooner, and Mr. Varnell were also obtained by the plaintiff, and the horses were sold at Tattersall's, and bought back by an agent of the defendant. Shortly afterwards they were again sold, but at different times and to different persons, and *each* at the time of sale examined by a veterinary surgeon, the one by Mr. Payne, of Market Drayton, the other by Mr. Kettle, of the same place, neither of whom, I believe, knew anything of the history of the animals, but both of whom failed to detect any appearance of spavin. Some time afterwards, and shortly before the trial, they were examined also by me, and I may here say emphatically, for myself, that, in my opinion, the hocks of both these horses were perfectly free from any appearance of spavin or any trace of disease of any kind. At the time of trial, one of the horses, then the property of a gentleman of high position in Staffordshire, to whom he had been sold, it may be mentioned, for a larger sum than that given for him originally by the plaintiff, was brought to London, and the coachman who drove him gave evidence to the fact of the horse having been regularly used in his master's carriage, and of his perfect freedom from all sign of lameness. The animal was also brought up for the inspection of the jury themselves. I need not say that the evidence was of the most contradictory character—Mavor, Field, Spooner, and Varnell, on the one side, and Ellis, Lucas, Bretherton, Payne, Kettle, and other less important witnesses, on the other side. Nothing reflecting more seriously on the character of professional evidence can possibly be conceived. The judge—Mr. Justice Erle—summed up rather, I think, in favor of the defendant; for he remarked somewhat pertinently that as the horses had, since they left the plaintiff's possession, been sold for more than he had given for them in the first place, and were shown to be still worth the money, although they had never been subjected to any veterinary treatment, he (the plaintiff) who was suing for damages had suffered no damage, except by his own act of parting with the horses in the particular manner he had done. The jury were locked up a considerable time, but eventually found a verdict for the plaintiff. I must resist any temptation to comment at much length on this case, excepting in so far as it illustrates the absurdity of the law itself. Where such authorities as these differ in professional opinion, could any jury—it may be, of twelve men, not one, of

whom, perhaps, was ever on horseback in his life—be expected to deal out justice? Is justice in such a case not a mere matter of chance, or, perhaps, rather a matter of locality? A London jury naturally attaches more weight to the opinions of men like the professors of the London College and Messrs. Field and Mavor. A jury in Liverpool, or, perhaps, in the provinces, would, I think, have found a different verdict on the same evidence. You yourself may probably think that the weight of authority leans to the witness for the plaintiff; whilst I, on the other hand, may value the sound practical knowledge and varied experience of those of the defendant considerably the highest. "Who shall decide when doctors disagree?" What amount of reasoning can remove the evils, of which this case is only a sample; for many others, quite as bad, may be quoted? I think it must be admitted on all hands that the case is hopeless. The limb (of the law) is terribly, incurably diseased, and there is no remedy excepting in amputation. Try to get rid of it altogether."

The effect of such occurrences as these it will easily be seen must to some extent operate injuriously on the production or first-class horses. The burnt child dreads the fire, and the breeder who has once found himself involved in a horse case will very likely turn his attention in future to stock of a less hazardous description. Mr. Litt does not forget to notice this fact:—

"All this is bad enough, but worse remains to be told. The greatest of all the evils that spring from this condition of the law is undoubtedly the effect produced on the breeding and rearing of first class horses generally. It is not too much to say that many of the largest and best breeders of such animals have been deterred by it from this most important pursuit. I speak only of circumstances within my own knowledge, when I say that it is not easy to estimate the injurious influence of the law of warranty in this direction. Of all the causes that have tended of late years to bring about the scarcity of half-bred horses of the highest quality—for, I think, the fact of this increased and still increasing scarcity will hardly be denied—this is certainly one of the most potent, and it demands, therefore, a more serious consideration, on this account alone, than has hitherto been accorded to it. And, for all this evil to individuals and to the community, what is there in the law of warranty really of compensatory good? You hint that it is chiefly of advantage to the dealer, as affording him too many pretexts for fraudulent attempts to obtain back a portion of the purchase money, and I have myself known more than one instance of the character you relate. There can be no doubt that it does very often serve the purpose of enabling—not dealers only—but many other persons besides—to repudiate a bargain which they have begun to repent. It is idle to speak of it, therefore, as a protection

to the public; for it is the very reverse. They require no such protection. It is sufficient for the law to protect the public against fraud, and men ought to buy horses as they buy other things. If they have not sufficient confidence in their own knowledge of an article they wish to purchase, they ask the opinion, and are guided by the advice, of some one peculiarly qualified to judge of such matters. In the matter of horse-flesh here is a profession, whose members have made this qualification almost a special branch of study. Against false and fraudulent representations on the part of the vendor, be he who he may, let the law be as stringent as you like; but until it ceases to recognize that mischievous thing called a warranty of soundness. I fear there can little good be effected. With these sentiments it will be seen I am not of opinion that it is very important to discuss the question of what ought or ought not to be considered unsoundness in a strictly legal sense. I have had some experience in horse causes, and I have never found much weight attached to veterinary opinions on this subject. As a general rule, I have found that everything of the character of disease, no matter how slight or insignificant, has been held to be an unsoundness, and that to be compelled to admit the slightest deviation from a perfect normal structure of parts was always fatal to any attempt to establish the soundness of an animal."

With such a condition of the law, it is no wonder if often an undeserved amount of odium is made to rest on the shoulders of the examiner. Some of our friends may feel interested to know what one so well qualified to speak as Mr. Litt has to say on this part of the subject:—

"It often happens, however, that the veterinary surgeon—and this is a point that is especially worthy of mention—feels himself compelled, by the absurd state of the law, to give certificates of unsoundness in cases of ailments of so light a character that even he himself scarcely thinks them merited. I was requested a few days ago, for example, to examine, after purchase, a valuable horse, bought by a gentleman in the country for a friend in London. There was, in the inner surface of the head of one of the large metatarsal bones a slight exostosis, quite insulated, as it were, and seemingly unconnected with the hock joint. He was not lame in the slightest, nor likely to be from such a cause. It was the most insignificant thing possible to the eye, and my general rule, in such cases, is to point the thing out to the purchaser, and advise him to take a special warranty in connection with it for a given time. Here, however, I had no such privilege. I was simply asked to give a certificate, and I had no resource but to say "Unsoundness from bone spavin;" for, had I refused to do this, in all probability somebody would have done it when the horse got to London, and the consequence



of my refusal might have been a job for the lawyers. If our employers insist, therefore, upon an absolute *yes* or *no* to the question, 'Is my horse sound in point of law as well as in fact?' it is best for all parties that we should say *no* at once, if there is the very least deviation from a healthy condition; for we can do no greater wrong than to lead them into law. There was a time when I was inclined to stand more firmly by my own views of soundness, in opposition to what I considered unjust and empirical dogmas; but I have had reason to think differently. My opinion that a slightly ragged condition of the frogs, in the hind feet of a mare, was not sufficient cause of unsoundness, on one occasion induced the gentleman who had sold her to defend an action that looked like a mere attempt to repudiate a bargain. The mare had never been lame—at the time of the trial her frogs were sound and firm, although they had undergone no treatment, beyond being kept dry, and a little ragged horn cut away—and my views were supported by several veterinary surgeons of considerable standing; but the authority of Mr. Baron Parke on the subject of thrush was too much for us. Since then I have been especially careful not to differ from such very practical gentlemen as those barons of the law, where there is any danger of a collision, although at other times I prefer to exercise my own opinion, with, I think, rather more of justice to all who may happen to be concerned."

The able editor of the *Veterinary Review* fully endorses Mr. Litt's views. The old Roman law which is still in vogue over the dominions of our most gracious Queen, he reminds us, has been gradually abandoned over the continent of Europe. The French law, for example, regards all palpable defects as necessarily to be seen by the buyer; but if intermittent diseases are discovered, which could not have been observed at the time of the contract being closed, the horse can be returned. This reduces the cases of breach of warranty to a very few, which refer rather to positive frauds than to anything else. "In drawing attention," it is added, "to Mr. Litt's excellent communication, we wish to express a decided conviction that, as the law of warranty stands, no gentleman can submit to its uncertainties and injustices. In signing a deed a person is supposed to understand thoroughly the purport of its contents; but if a contract regarding a horse pronounced sound is signed, it is impossible for non-professional men, and often difficult for a veterinarian, to know if he is subscribing his name to that which may stand the test of a searching enquiry. Admitting that horses should be purchased with the advantage of mature judgment to assist the uninitiated, and that a warranty of soundness must not be relied on, we think it is perfectly proper to retain the law of warranty as far as vice is concerned. Agreeing, therefore, that

the rule *caveat emptor* should be respected, there are many defects such as gibbing, shying, kicking, crib-biting, vicious to shoe or to clean, running away, &c., which might be provided against by warranty, just as much as coloured goods may be warranted fast-coloured. As the opportunities of testing for such vices are very limited in buying, it is expedient to protect the purchaser, at all events until he can have had ample means of trial. There can be few who look upon the warranty of horses as at all advisable or satisfactory; and as the law is certainly very defective, amendment, if not complete demolition, should be insisted upon. It is well known that horse-breeding is rendered so precarious by the practice of warranty as to deter persons from rearing colts. Mr. Litt specially refers to this; and we think our keen sportsmen, who pay so dearly for weight-carrying hunters, and agriculturists, who might profit largely by a safe trade in horses, should lend a helping hand, and insist on better legislation of the subject under notice. If we ask veterinarians to take up the subject warmly we must also instruct the public, and it is to be hoped that the agricultural and sporting press may assist us in framing a new system, as favourable to the farmer as it would be to the public at large.—*Mark Lane Express*.

### Cultivation of the White Bean.

For years we have earnestly advocated the more extensive cultivation of the white bean as a field crop on American Farms.

The great need of American agriculture is a good "fallow crop"—some plant that will stand our hot, dry summers, enrich the soil, and allow the use of the horse hoe to clean the land during its growth. A plant, in short, that shall occupy the same place in our rotation as the turnip does in English agriculture.

The white bean comes nearer to this than any other plant yet introduced. If the beans are consumed on the farm—as turnips always are in England—their cultivation would add materially to its fertility. There can be no doubt on this point. All the leguminous plants—including clover, peas, vetches, beans, etc.—contain large quantities of nitrogen, and this when consumed by animals or plowed under, is converted into ammonia—the very thing which we must need for the growth of the cereals.

Let us then grow beans. No crop will pay better. When prices are good, as at present, they can be sold; and if prices fall, they can be fed out on the farm with advantage.

In regard to their cultivation we have written so much in previous volumes that little need be added at this time. They are generally grown on warm, light soil, but will succeed on almost any soil if properly cultivated. For this, as for

all other crops, the land should be well under-drained, either naturally or artificially. The land may be plowed in the fall and again in the spring, and made clean and mellow before planting; or a clover sod may be turned over, and the beans planted at once. The common "white medium" is generally considered the most productive variety, but the White Mountain or Marrow yields nearly or quite as well, and brings a better price. It is a little larger, rounder, plumper and handsomer, and is gaining in popular esteem.

They may be planted in hills  $2\frac{1}{2}$  feet apart, and 15 to 18 inches apart in the rows, dropping five to six beans in each hill; or they may be drilled in with a machine, in rows  $2\frac{1}{2}$  feet apart, and a single bean 2 inches apart in the rows. The latter, perhaps gives the larger crop, but the former requires less labour in hoeing, etc. In this section they are usually planted the first week in June.—*Genesee Farmer*.

### Benefit of Hogs among Fruit Trees.

The principal object I had in buying the farm I now live, on was the fine orchards of fruit. They were then in a very thrifty condition, loaded year after year, with large crops of fruit; but when we came to picking and packing, we were obliged to throw out large portions of them on account of the worm holes and curculio stings with which they were more or less affected, rendering them unsaleable and fit only for  $\epsilon$  der.

The lower orchard, (the orchards are divided by a public highway,) I have for several years past used as a hog pasture, with very satisfactory results. The apples which were heretofore wormy and knotty, are now as fair, smooth, and free from blemish, as one would wish to see. I allow my hogs and pigs, (the more the better,) free access to the orchards the year round, except a few days in October, while gathering and packing the apples. It is seldom apples fall before they are ripe unless something ails them, and that *something* is usually an apple worm or a curculio, and as the pigs are not very particular about their diet, all goes down with a relish, thereby destroying millions of troublesome insects which could not otherwise be got rid of.

The hogs kept the orchard thoroughly plowed and manured without any assistance from me; kept down the grass and weeds, rendering the orchard much thrifter than could be done with broadcast cultivation, as the hogs do not disturb the roots, but a plow would, besides the inconvenience of working among trees, where you are liable to do more harm than good.

My upper orchard I am obliged to mow, and one would be astonished at the comparative quantity and quality of the fruit in the two orchards. The difference in quantity is as six to one, and the quality 100 per cent,

The pear and cherry trees enclosed in the orchard in which the hogs run, are loaded every year with crops of fruit which would make an amateur's mouth water—while on trees of the same varieties just across the road, can only be found knotty, wormy, unpalatable specimens. Now I can no more afford to be without hogs in my orchard, than I can afford to be without fruit; for without one I should be almost certain to be deprived of the other; and by adopting this course I seldom fail of having a good crop, and *never* fail of finding a ready sale at remunerative prices, even when there is a large crop.

If any of the readers of your excellent journal are skeptical on this point, let them try it for a term of years, and I believe their skepticism will vanish with the increase in their crops.

J. P.

Oswego, N. Y.—*Country Gentleman*.

### Agricultural Intelligence.

#### Spring and Summer Horticultural and other Shows.

Hamilton Horticultural Society, 1st Show, May 24—

Niagara Electoral Division Society, at Niagara, June 27th.

Kingston Electoral Division Society, Horticultural Show, at Kingston, July 2nd.

#### Provincial and State Shows, 1862.

Upper Canada, at Toronto, September 22nd—26th.

Lower Canada, at Sherbrooke, 17th, 18th, 19th September.

New York State, at Rochester, September 30 to October 3rd.

Illinois State, at Peoria, Sept. 29 to Oct. 4.

STOCK FOR CANADA.—The *Helen Douglas*, of Annan, Capt. Maxwell, sailed from Annan Water-foot for Quebec, on Monday last, and had on board the following stock, which has been purchased in this country by Mr. Simon Beattie of Markham, C. W., a native of this place: An entire thorough-bred horse, called Young Irish Bird-catcher, late The Heir, by Grey Plover, son of Irish Bird-catcher—dam by Caronna, out of Repartee; two Short-Horn heifers, and two bull calves, purchased from a good stock near Lesmahagow; 40 Leicester and Lincolnshire sheep selected from one of the best flocks in Lincolnshire; two sows and one boar from Yorkshire and poultry, dogs, &c. The horse was purchased by Mr. Beattie in Ireland.—*Anr<sup>n</sup>* (Scotland) *Observer*.



COMPARATIVE VALUE OF OATS AND ROOTS.  
—Four and two-thirds pounds of oats are estimated by analysis to contain a little over one pound of Flesh, muscle and fat forming principles; to equal that it will take, of carrots, nearly nine lbs.; of Aberdeen turnips, near twenty lbs.; and of Swedish turnips, near seventeen pounds. It will be seen that the difference is greatly in favor of oats.

### Horticultural.

#### The Early Short Horn Carrot.



The early horn carrot is the principal kind used by gardeners on both sides of the Atlantic for early crops; and it is considered the best variety for table use. It possesses a very fine flavour, and commands a ready sale in market. It should be sown early, but we have seen good crops of it produced in Canada in backward seasons like the present, when sown as late as the middle of May. The above cut will afford an idea of the general appearance of this valuable esculent.

For later crops the Altringham and long orange varieties are commonly cultivated; they afford a heavier produce, but are not equal in

firmness of texture and delicacy of flavour to the early horn. Of late years other varieties of early carrots specially adapted to table use have been introduced, but the early horn continues to maintain the precedence. The short yellow, obtained from seed by Mr Vilmorin of Paris, has in Europe a good reputation, and the violet of that seedsman is said to be a large and exceedingly sweet variety, sent to him from Spain.

The long red is usually raised by farmers for feeding stock; but the white or Belgian carrot is now generally cultivated in fields for agricultural purposes, and, when properly managed, yields very heavy crops. For horses in particular, the carrot is excellent.

Carrots of all varieties are easily raised in Canada; they thrive best on a light, rich loam, which should be deeply cultivated; and if farm yard manure is used it should be well decomposed and *thoroughly incorporated* with the whole of the active soil. The seeds have numerous forked hairs on their borders, by which they adhere together, and therefore should, previously to sowing, be rubbed between the hands, and mixed with dry sand in order to separate them as much as possible. The seed being exceedingly light should be sown only in calm weather, carefully covered by the rake, and the surface compressed by a light roller. It is expedient often to test the vitality of the seed previous to sowing, by mixing it with fine sand in a heap, occasionally watering it for two or three weeks; this, however, should be done very early in the season, that germination may only be slightly advanced before finally committing the seed to the earth, otherwise the plant would be weakened. For a bed  $4\frac{1}{2}$  feet by 30 feet, one ounce will be requisite, and the same for 150 feet of drill or row.

#### Grafting Fruit Trees.

An excellent little work on the "*Science and Practice of Gardening*," has just appeared in England from the able pen of Geo. W. Johnson, Esq., one of the highest authorities in Europe on Horticulture. The following is a portion of the author's observations on grafting. We shall again refer to this very useful manual:—

peared in England from the able pen of Geo. W. Johnson, Esq., one of the highest authorities in Europe on Horticulture. The following is a portion of the author's observations on grafting. We shall again refer to this very useful manual:—

for in such case the Green Gage would be altered by its Plum stock, and the *Nonpareil* by its Crab stem. So far from this being the case, the old gardener's maxim—"The graft overruleth the stock quite," in consonance with truth, though it is to be taken with some reservation. The graft prevails and retains its qualities; yet the stock has the power of influencing its productiveness as well as the quality of the fruit. Thus, a tree having an expansive foliage and robust growth, indicative of large sap vessels and vigorous circulation, should never be grafted upon a stock oppositely characterised, for the supply of sap will not be sufficient: illustrations are afforded by the *Codlin* never succeeding so well on a Crab, nor a *Bigarreau* on a wild Cherry, as they do on freer-growing stocks. Indeed, we have no doubt that every tree and shrub succeeds best, is most productive, and most free from disease, if it be supplied with sap from roots and through a stem of its own peculiar kind. This is evident to common sense; nor would any scion be grafted upon a stock of another species or variety, if it were not that such stocks are most easily obtainable, or for producing some alteration in the habit of the plant, or to fit it for some particular soil.—For example, our choicest Cherries are grafted or budded upon the wild Cherry only because of its being easily obtained; and every one must have noticed the frequently occurring consequence, an enlargement, appearing like a wen, encircling the tree just above where the graft and the stock joined—the growth of the former having far outstripped that of the latter. But the stock has some other influence over the sap, besides limiting the quantity of sap supplied to the scion, an influence not only arising from the size of its vessels, but from its susceptibility to heat. It has a further influence over the scion by the sap becoming more rich, indicated by its acquiring a greater specific gravity in some stocks than in others, during its upward progress. The specific gravity of the sap of a *Black Cluster* Vine stock on which a *Black Hamburg* had been grafted was, when obtained six inches from the ground, 1.003, and at five feet from the ground 1.006; but the same *Black Hamburg*, growing upon its own roots, had specific gravities at corresponding heights of 1.004 and 1.009. This increase is of great importance to a tree's growth when the quantity of sap passing annually through its vessels is considered. The

exact amount of this it is perhaps impossible to discover, but its extent may be appreciated by the quantity of moisture their roots are known to imbibe, and by the facts that a small Vine-branch has poured out 16 ozs. of sap in twenty-four hours; a Birch tree a quantity equal to its own weight during the bleaching season; and a moderate-sized Maple about 200 pints during the same period."

### Culture of Melons.

It is a great object to get melons early. This cool, richest and most luscious of all herbaceous fruits, to be fully appreciated, should be eaten in the hot weather of July, August and early September. They may be started in the hot-bed, provided some means be contrived by which they may be lifted and transplanted to open ground without disturbing the roots. Some plant over a piece of turf in the hot-bed, which may be carried with the plants to the open ground; others, in small open baskets, which may be set with the plants in the hill, the roots being able to push through the interstices in the basket; and others again in a shell made by excavating a large turnip, which soon rots in the ground or may be removed after the plants are carried to the hill. In this climate, however, it is easy, with a little care, to raise melons sufficiently early in the open ground.

A light, rich, sandy soil should be selected. In the lack of such a soil, it will be well to supply a bushel or two of sand to each hill. The soil should be deeply dug, thoroughly pulverized and enriched. A little finely pulverized chicken or pigeon manure, mixed with the soil of each hill, will be found an excellent stimulant. A frame, a few inches high, around each hill, may be covered with glass or mosquito netting, and will be a great protection to the plants from cold winds, frost, or the striped bugs. Eight or ten seeds should be planted in each hill, and after they are safe from insects, should be thinned out to two or three.

The greatest difficulty in point of success in melon raising, is in obtaining and preserving the seed pure. The varieties of the melon readily mix with each other, and if you save your own seed, without great care, you will soon have no good melons.

The fruit, the first year will not show the mixture; the second year it will be quite apparent, and the third year may be worthless. To preserve the seed pure, it is not safe to plant nearer than ten rods of any variety with which they can mix. When you have planted a good variety where it is safe from admixture, save seed enough to last five years. Melon seed improves with age up to five or six years.—*Valley Farmer*.



## The Dairy.

*From the Ohio Farmer.*

### How to make Cheese.

I have been a cheese-maker for fifteen years, and I thought that at the opening of this year I would give the readers of the Ohio Farmer the benefit of my experience in cheese-making. The first thing necessary to success in cheese-making is

#### *A Good Grass Farm,*

Where timothy, red-top, clover, and other tame grasses abound, instead of the harsh, coarse, wild grasses. These latter will not yield the quantity nor quality of milk that dairymen want. But this is well settled and admitted.

#### *Good Cheese Houses.*

After the grass and comfortable houses for stock and tenants, come convenient and comfortable cheese-houses for making and curing the cheese. These save much unnecessary labor.

#### *Good Cows.*

There cannot be too much care in selecting cows for the dairy, as one good cow is worth two poor ones.

#### *Milking.*

Almost every one can milk, yet there is no part of cheese-making done with less care and attention than this, nor is there any part which ought to be done with greater care and precision than milking. It is usually done (in this country) in a muddy yard, and at very irregular periods; sometimes before light in the morning; sometimes after dark at night; sometimes at 9 o'clock in the morning, or 4 in the afternoon; sometimes by one milker and then by another; this, in my judgment is all wrong. The cows should be driven to the barn at regular hours, morning and evening; they should all be put into the stables and milked by the same person every time; don't change milkers, but have steady milkers for the same cows. A cow should not only be milked by the same person, and at the same hour, but she should be milked in the same time. In order to do this, there should be no noise, or talk, or play, among the milkers. I cannot urge this caution too strongly—upon it depend the profits of cheese-making.

#### *How long should Cows be kept from pasture.*

Not over one and a-half to two hours. Most of this time is necessarily consumed in driving to and from the pasture, and in milking. Thus from three to four hours each day of the cow's best time for grazing is used up. The rule is, to be as expeditious as possible; upon it depends the success of cheese-making.

#### *Scrupulous Cleanliness.*

Should be observed in everything about the

dairy-house, milk-pails, place of straining milk, whether in the vat or elsewhere. All dirt, mud or standing water around or near the place of making cheese should be removed, and none permitted to stay in the presence or near the place of keeping milk or making cheese. There is not known to me any production, animal or vegetable, so sensible to impressions from surrounding circumstances as milk, cream, and butter; hence arises the necessity of keeping everything around the dairy as sweet and clean as possible. No person who lies in bed until his evening milk sours, or who is not careful about his milk, can possibly make cheese of the first quality. Very much more ought to be said upon this part of the subject, and very much more attention ought to be given to it by nearly every one of our dairymen. Next in order comes

#### *Preparing milk to receive the Rennet.*

This is done in ways almost without number, with very nearly the same result. All kinds of vats are used, like all kinds of cooking-stoves and mowing machines, every one thinking his own the best. I have always used the one made by Jameston & Co., of Warren, Trumbull county, Ohio, and like it very well, (perhaps it is not the best.) We strain our evening's milk into this vat, and manage, by using cold water, to extract the animal heat from the milk as soon as possible, in order to have it retain its sweetness until morning and to obstruct the rising of the cream. In the morning, what cream does rise is removed, and the morning's strained into the vat with the evening's milk, which cools the whole together, when a fire is started in the furnace of the vat, and by heating the water, all the milk is heated together to 84 deg., when a sufficient quantity of the rennet, with just enough good, nice coloring is added, to turn the milk to a firm curd, and give it a shade as near the color of butter as possible.—I should have said, that in the cheese making season we do not make any butter; therefore the cream taken off in the morning, as mentioned above, is heated to 120 deg. Fahr., and turned back into milk at the time of putting in the rennet, and all stirred together. This is left to stand from thirty to forty minutes, or until all has thickened to a firm curd. One word

#### *About the Rennet.*

The Rennet should be well prepared, and great care should be taken to preserve it and keep it sweet. I am very certain that rennet changed, tainted, or in the least sour, is very injurious to cheese.

#### *Management of the Curd.*

When the milk has hardened, (as above described,) I take a curd knife composed of five blades, known as D. G. Young's curd knife, (which I am sorry to say is not in general use in this country,) using it as directed by him, which is, to hold the knife upright, drawing

it forward and back carefully, until the curd is cut into blocks of about one-half inch square. Start the fire slowly in the forenoon. Let it stand ten or fifteen minutes, then use the knife again very carefully, so as not to start off the cream, or as the common saying is not to start the white whey. Great care should be taken not to mash the curd, so as to make the whey come from the cheese, as this is the cream; therefore, the best of milk. It is thus carefully worked and carefully heated until all comes to 92 or 94 degrees of heat, when the fire is put out and the heating process stopped, and we call it scalded sufficiently for any cheese in any time of year, if cut as fine as it should be, and worked in a proper manner. I use the curd-knife until curd is as fine as desirable, which should not be larger than peas. The curd is then left to cool, still stirring it to hasten the cooling. When thoroughly cooled, the curd is put to press.

#### *The Press.*

A good press is indispensable to good cheese-making, and presses are like many other patents, very numerous. But, in my opinion, a press should be able to press at least two thousand pounds, especially for a large cheese. A cheese must be well pressed, and still not pressed so as to make it salvy, which is sometimes the case, and very much injures the cheese.

#### *How to Press.*

We always press a cheese two days. It is left in the press one day without being disturbed. When my next day's cheese is in the press, I then turn my cheese, made the day before, into a clean, sweet strainer, and it is pressed with nearly or quite double the pressure of the first day. When I desire a cheese of from eighty to one hundred pounds weight, I apply seven hundred and fifty or eight hundred pounds pressure the first day, and about fifteen or sixteen hundred the second day.

#### *Capping and Dressing.*

When the cheese is taken from the press, it is immediately dressed in a shirt of cotton—thin cotton called capping or sacking, made for this purpose. We cap them all over, especially our heavy cheese; they are then scalded over with boiling water to make the sack adhere closely to the cheese; we press lightly under the press for a few minutes, when it is taken to the dairy-room and left without greasing for eight or ten days, that it may dry, and the gas which it still contains may escape. There is then a coat of warm grease put on it to prevent its molding, (it should then be turned daily before greasing.) It should then be placed on a clean, dry shelf or table, and turned every day until well cured.

#### *Dairy-Room Ventilated.*

The dairy-room should be well ventilated,

airy, light dry room, in order to cure cheese as it should be. Notwithstanding, many of our dairy-men, and even in some sections of England, dairy-men say the room should be kept close and dark. This appears to me to be un-natural, as almost everything requires air and light in order to have beauty and perfection.

I have made cheese nearly for fifteen years, and have never found it a difficult matter to sell cheese made and cured as above, at the very highest market price. Sixty cows have been our number for three years past. It is not to boast, but it is said by cheese-buyers that I sold my cheese, last season, the highest of any man in this country.—*Silas N. Jones, North Bloomfield, Turnbull Co., O.*

### **Domestic.**

#### **Packing Eggs for Long Journeys.**

The only safe way of packing eggs is—1st.—Get a large hamper or box—put on the direction-card before packing—make holes for screwing the lid on; let there be no hammer used, but only screws and screw-driver. 2nd. Procure a box or hamper of such capacity that, when placed inside, you will have three or four inches space each way. Get some hay, which pull to pieces, separating to some extent, then a lot of old newspaper, cut up into lengths. To proceed (we suppose you have got the eggs) put each into the paper, twisting the ends of the paper sideways like a lady's curl wrapt up in an ordinary curling-paper, thus: egg, thin end downward; paper; place some hay in the box, then a layer of eggs in paper, then hay, and so on until the box is full; screw the lid on, put some hay in a box, then in another box, and all round, and at top, and fasten down. If screws, such as are used for stair-rods, were fastened into the four corners of the smaller box, and then a string tied from them to the four corners of the other box, all might be safer; also, if the large box, when filled, were swung in like way on board ship; but I do not think this is absolutely necessary, though advisable. The object of using the paper is, it keeps out all dust, and the ends acts as springs, as does also the hay. Bran and corn are bad, as there is much dust in both, and fresh air is kept away from the eggs; but the greatest fault is, they and the eggs pack into so solid a mass that there is not enough elasticity, and the consequence is the constant jars, so to speak, break the delicate membrane suspending the yoke in the shell, and the egg is "killed." Perhaps the following hint may be of use in the matter of packing eggs for long distances: the Dutch pack the plover's eggs for the English markets in strong wooden boxes with the husks of buckwheat, and we seldom have much breakage after the roughest passages.



and rough handling in transmission. They begin by covering the bottom of the box with a thick layer of husks, and so on till the box is nearly full, then fill in with husk, and pretty tightly putting on the lid. With the exception of an accident now and then, we don't have more than five in the hundred broken on the average throughout the season.

## The Poultry Yard.

### How to make Hens Profitable.

Mr. J. C. Thompson, of Staten Island, who takes an interest in all branches of husbandry, and pursues them with success, has contributed the following valuable observations on the keeping of poultry to the *American Agriculturist*. He has added since the publication in that periodical a postscript for the *Evening Post*.

"Most families in the country, and on the outskirts of cities, think they must keep one or more pigs to use up the offal of the family—or because it is the 'custom of the country.' Having tried pigs and become disgusted with the trouble, labour, expense, filth and noise—to say nothing of the inferiority of pork to eggs and poultry—I abandoned the former for the latter; the result has been quite satisfactory, and after several years trial, I feel confident the advantage is decidedly in favor of poultry. Here is my last years account: January 1, 1861, stock on hand, 70 fowls, of which fifteen died during the winter from unknown causes, leaving me 52 laying hens. From these I obtained in January, 409 eggs; in February, 439; in March, 681; in April, 959; in May, 835; in June, 801; in July, 719; in August, 603; in September, 421; in October, 332; in November, 286; and in December, 440. Total, from 52 hens, 6,925 eggs—equivalent, in bulk, to seven barrels, as a barrel packed for market contains just about 1,000 eggs.—About 8 eggs from the Leghorn or black Spanish breeds, weigh a pound. My 6,925 eggs therefore, weighed 865 pounds. Allowing the hens to weigh 5 pounds apiece, they each laid, on any average, three times their weight in eggs alone. As they hatched full a hundred chickens the weight of which, when ready for the table, must have been  $1\frac{1}{2}$  pounds each, the whole amount of food produced was over a thousand pounds, notwithstanding I killed off part of the old stock in June, July and August, depending on spring hatched chickens, which began to lay in August, to keep up a supply of eggs and replace those killed off. When we consider the amount of food (of the very best kind) produced in one year from so small a stock to start on, and then, too, the stock left whole at the end of the year, the advantage of poultry over pigs can be seen at a glance.

"To produce 1,000 pounds of pork will re-

quire a vast amount of labor, a vast quantity of food, and any quantity of noise—giving fresh food for only a short time and salt food for the balance of the year—and the stock not left whole to start on again, as in the case of poultry. The product in eggs was more than 6,925, perhaps over 7,000, as I detected a boy that had access to the hen-house for some time, in stealing them. The number named was actually collected. My stock is principally Leghorn; and it now costs \$3 per month to feed 75 head. As some may desire to know how the hens are managed, I send a brief description.

"THE HEN-HOUSE.—Mine is a lean to—10x16 feet—10 feet on the rear and 8 feet front, facing the south. A barn stands on the east and a shed on the west end, with a glass front, for a shelter and a feeding place in cold and wet weather. The roofs of both project three or four feet, which keeps the ground dry in front and about the entrance. The back and front of the house are lined or double boarded, and the front has three glazed sashes—furnished with inside shutters—a ventilator 16 inches square is placed in the roof with a valve hung at the bottom, to close more or less, as may be required, in cold and stormy weather.

"ROOSTS—A frame is made and hung to the rear of the house, which can be set at any desired inclination; the roosts are placed lengthwise on the frame, ladder-like, about 18 inches apart. As all fowls seek the highest roosts these are filled first, and others in succession. This brings them close together in cold weather. In warm weather the frame must be levelled to make them scatter on all the roosts and keep as cool as possible.—The floor being concreted, it is easy to clean, keeps out rats, and makes it dry. Under the roosts I place fine charcoal [a poor plan to use charcoal—Ed.] or dry earth, or muck to absorb the droppings; a few shovelfuls added each day keeps the house free from any bad odor. The rest of the floor should be covered with sawdust, dry earth, chaff or cut straw, for in cold weather, hens like to keep their feet dry and warm. Neither coal nor ashes should be put in the house, as they act on the manure and decompose the uric acid, thus wasting the ammonia, and making the house offensive.

"FOR NESTS—Use butter or lard tubs (which can be had at the grocer's for six cents each) set on shelves at the ends of the house, one or two feet from the floor—portable nests (with glass eggs) are best.—They should be often cleaned and supplied with fresh straw or hay. The grease on the tubs is a remedy against lice. Greasing the roosts at all the places where they touch the frame, and in fact, the inside of the house and roosts, with any kind of soft grease or fish oil is certain to destroy them, as they cannot live a moment in grease. A paint brush or

white-wash brush can be used for applying the grease, which should be done early in the spring, and again in summer, if it appears to be required.

**"MODE OF FEEDING.**—I give only sound grain; no other should be used. A variety is not objectionable. My standing dish is wheat screenings; this is always by them in a box slatted up at the sides for the purpose as a feeding box. In winter scalded corn meal or ground corn and oats is given to them cold in the morning; but the main food must be hard grains. They must be well supplied with finely cracked oyster shells, gravel and mortar, and green food in winter. Mine consume two or three heads of cabbage. They get bread scraps from the table, soup, meat, etc. In summer, grass, lettuce and cabbage are furnished daily in abundance—they will consume a great quantity.

**"YARD ROOM.**—The permanent yard is 50x50 opening into a grazing and rambling lot of 50x100, also used as a plum orchard. The fence is only 5 feet high, and by feeding well and clipping the feathers on one wing there is no trouble in keeping them at all times within the yard.

**"SETTING THE HENS**—To insure good healthy chicks, the hen should be set in March, and certainly not later than April. By having portable nests, when hens desire to set and become fixed in the habit in the setting season, they can be supplied with eggs (the date of setting marked on them in ink or pencil,) and any number of nests moved to a room for the purpose, which must be kept closed, and well supplied with food and water. The nests may all be set side by side, for if the hens should all leave their nests at once to feed, when they return they will each take a nest, although they may change places. This arrangement insures their setting steady, as they are not compelled to wander off for food, but return quickly to the nests and keep up the warmth of the eggs, and thus bring out strong chicks. By setting a number at one time, if some hatch half broods they can be put together with one hen. When a setting hen looks pale about the head it is evident she is lousy; clean and wash the nest, grease the hen under the wings, on the back and rump, wash the eggs in warm water, and return to the nest.

**"TREATMENT OF CHICKS.**—When first hatched they must be fed on bread soaked in milk; after three or four days, feed with cooked or scalded Indian meal three times a day; but finely cracked corn or wheat screenings, should be always within their reach; also clean water. The hens with chicks should be kept in coops for several days, the coops kept dry and clean and placed in sheltered places. With such treatment not five per cent. of chicks will be lost. In conclusion let me say, the secret of success is this. They must be young, well fed and cared for, and

small numbers—12 to 25—pay much better in proportion than large flocks.

J. C. THOMPSON,

"Tompkinsville, Staten Island, N. Y.

**"P.S.**—Since writing the above I find 75 hens will eat six quarts of Indian corn a day, they helping themselves to it, that is, a peck to one hundred hens. The test was made on Indian corn, that being the staple food for poultry."

## The Apiary.

### Bee Pastures.

Old and experienced beekeepers tell us that there is such a thing as overstocking a country with bees. That you can get too many bees for your pasture as easily as you can get too many cattle or sheep for your pasture. This, undoubtedly, is sometimes the case. It is, therefore, an object of some importance to enquire into the subject and endeavor to find out in what way bee pastures can be increased in any way. A little study into their habits and wants will put us on the right track.

We believe bees do not stop to enquire into the genus or species of the plant, shrub or tree on which they feed. They are not very particular whether it be on lowland or highland. They have been known to cross the water, five miles from hives on the main land to flowers that distance from them, on an island. Their only enquiry therefore seems to be the instinctive one, whether the flowers and fruits within their reach contain honey or not. The earliest bee pasture that we can furnish them in Maine, is maple sap. In warm days of our early spring, and before any flowers have put forth in our latitude, you will often see bees flitting about the sap troughs at the foot of maple trees in sunny situations, or on the surface of the stumps of maple trees that have been cut down during the winter, and from which the sap oozes out. It would not, therefore, be a bad plan to set small shallow vessels of maple sap in the vicinity of the apiary early in the spring, from which the bees might sip and separate the honey.

The next earliest source of food for them among us, is the willow. The several varieties of the willow blossom earliest, perhaps, of any thing, and from these blossoms the bees collect not only honey, but farina. It is, therefore, an object for bee keepers to not only preserve the willow, but to set them out in moist, waste places, if for no other purpose than for early bee pasture.

The red maple and the elm come next in blossom, and bees also visit them for the purpose of obtaining honey and other substances which they work up in their operations of the hive. By this time quite a number of shrubs and flowers have come into blossom, such as the



swamp pear, (*aronia*), the plum cherry, and subsequently the apple and pear. All of these become so many sources of food to the bees. Later yet, the basswood throws out a profusion of flowers, and the bees are always found abundantly around them when in blossom. It would be well to have more of these trees out by fences and road sides. They are highly ornamental as well as useful for bee pasture.

The locust, or yellow locust, is another tree which grows rapidly and blossoms profusely, of the flowers of which bees are very fond. These should be more extensively cultivated, though the borers sometimes make sad havoc with them.

Of all the flowers it is thought that of the white clover is most acceptable and most productive of honey to bees. This is a native of the country and will grow almost any where, especially if it be encouraged by sowing a little plaster on it.

Buckwheat is often sowed for no other purpose than to afford pasture to bees.

In addition to these, the other flowers of the fields and the gardens all add to the extent of the bee pasture, and should all be multiplied and cultivated wherever they can be conveniently.

The Russians sometimes cultivate quite extensively the common borage of the gardens for the use of bees, thinking, and probably not without reason, that it affords a good supply of honey, which is easily obtained by the bee. Perhaps some of our readers can think of other sources of feed to bees, the cultivation of which would enlarge the *area of honey* and make it worth the trouble to cultivate them.—*Maine Farmer*.

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Bots in Horses.

EDITORS CANADIAN AGRICULTURIST.—Under the above head of page 154 of the "Agriculturist" is a receipt, which it is said will generally afford relief in five or ten minutes. Feeling much interest in arriving at a right conclusion in this matter, I last year sent you an extract from Youatt & Skinner's work on the horse, wherein it was stated that bots, while they inhabit the stomach of the horse cannot give the animal any pain: that they cannot be removed by any medicine that can safely be administered, and that in due course of time they come away.

I have had some experience with horses for the past twenty-five years, and occasionally (for want of a better) have been obliged to be my own horse doctor; but I never yet saw a case of suffering from bots. I have heard of most extraordinary cases, such as the stomach being eaten through, and I was recently positively assured by an intelligent person that he had lost

a fine young horse from bots, where there was no symptom of the cause twenty-four hours before death, that he did not make a thorough examination after death, but that he found the wind-pipe full of bots.

I now address you under the hope that some of your readers who have had experience in such matters will state which is the correct treatment; to endeavour to expel them or to let them take their one course.

BRIAR.

### REMARKS.

The mucous membrane lining the stomach of the horse, is divided into two portions, a cuticular and villous. The cuticular is on the left side and is continuous with the cuticular lining of the oesophagus; this coat is covered by thick scaly epithelium and is thrown into folds, which folds disappear when the stomach becomes dilated. The mucous membrane of the right side is called the villous, and this portion, the true digestive stomach, the mucous membrane is thick, soft and pulpy.

Bots occur chiefly amongst young horses, grazing on damp coarse pastures, shaded with trees. The female fly deposits her eggs on the shoulders, legs, or other parts of the body within reach of the animal's tongue, by which they are carried into the mouth and thence to their common *nidus*, the cuticular portion of the stomach. It is the cuticular half of the stomach that bots inhabit generally, and from this circumstance, that they are fastened to a part not very sensitive, bots do not give rise to such pain and irritation as is frequently imagined.

The larva, or worm, being hatched and lodged in the stomach, immediately clings by means of its tenacula to the cuticular coat which it pierces, and so pertinaciously does the bot adhere, that it will frequently suffer its hook to be broken rather than quit its hold.

This larva is found very difficult to destroy and resists the action of most medicines, but there are certain times when they pass out, and then their removal can be expedited by certain medicines. An easy remedy is to rub down in hot water about three drachms each of aloes and assafoetida, and when the solution has got cool add to it an ounce each of turpentine and sulphuric ether; repeat the dose every second day for a week, leaving out the aloes if the bowels become too open. Along with such

treatment it is necessary to give good food and a change of diet.

When bots only exist in small numbers they are generally harmless, when a multitude they prove detrimental to digestion, by absorbing part of the juices necessary for that process.

Percivall in his work on diseases of the horse mentions that he recollects of hearing Professor Coleman say, that he knew of a case where bots appeared to have destroyed life, since after death the coats of the stomach appeared eroded in places, as well as the diaphragm, and some of them had made their way into the cavity of the chest.

### Inflammation in Animals.

▲ LECTURE BY PROFESSOR DICK, OF EDINBURGH.

(Concluded from Page 118.)

In the previous lecture we pointed out that in the web of a frog's foot, in which, from its transparency, the various processes which take place in it can be perceived with considerable facility by means of a microscope, the flow of blood through the minute vessels or capillaries becomes slower and slower, and at last comes to a complete stand-still, notwithstanding that the latter are dilated beyond their usual dimensions; and offer, therefore, apparently at least, less mechanical resistance to the onward passage of the blood than usual. We further pointed out that this remarkable stagnation of the blood in a part about to become inflamed is not due to any primary alteration of the blood corpuscles, in as much as these bodies exhibit no deviations from their usual properties in the vessels before they arrive at, and after they left, the part about to become the seat of inflammation, so that the cause of the remarkable tendency which the corpuscles show to adhere to each other and to the walls of the vessels, so as to cause stagnation of the circulation, must be looked for in some alteration which has taken place in the surrounding textures.

In order to understand the nature of the alteration which first takes place in the textures of a part about to become inflamed, so as to cause stagnation of the circulation, it will be necessary to notice the remarkable movements which take place in certain cells, called pigment cells, of the frog's foot, and which appear to have been first noticed by Brucke, of Vienna, in 1852, but more recently and more correctly by Mr. Lister in the Philosophical Transactions for 1858. It has been long known that the frog is capable of changing its colour under certain circumstances—becoming dark when placed in

a dark place, and assuming a brighter hue when placed in the light. This capability of the frog of changing its colour, although possessed to a certain extent by all the species of the frogs, appears to be best marked in the tree frog. Now, the lighter or darker hue of the frog at different times is due to changes in the pigment cells above mentioned. These cells are distributed, in great numbers in the substance of the true skin, and, in the web at least, are situated also on the walls of blood-vessels. On examining the web with the microscope, and directing attention to the pigment cells, they are seen to be black bodies consisting of a central portion, from which processes of various sizes radiate. On more careful examination each cell is found to consist, like all other cells of a delicate yet firm and elastic membrane, enclosing in its central portion a round colourless body, called the nucleus. The nucleus is usually situated in the centre of the cell, but sometimes it is found placed more to one side. In addition to the nucleus, the cell contains a transparent, colourless fluid, in which float an immense number of minute particles which, when viewed singly, have a brownish tint, but when seen aggregated in groups, present a coal-black appearance. The processes which proceed from the central cell likewise contain fluid and coloured particles, so that they are not solid outgrowths of the cell wall, but may be regarded, as in truth they are, tubular prolongations of the cell itself. These processes, where they arise from the central portion of the cell, are usually of considerable breadth, but as they pass outwards they soon ramify and split up into numerous slender, thread-like lines, which anastomose or become continuous with similar prolongation from neighbouring cells. All these processes, even the most minute, are hollow, and consist of a delicate membrane, continuous with that of the central cell, and are filled with a colourless fluid, in which coloured particles float. It follows, therefore, that the contents of the central cell can pass readily into the various processes which radiate from it, and *vice versa* the contents of the processes may, under other circumstances, pass into the cavity of the cell. Moreover, owing to the processes of one cell anastomosing freely with similar processes of neighbouring cells, the contents of one cell may mingle with those of other cells. It is doubtful, however, whether this actually does take place, but at all events we have here a remarkable series of tubes, along which the pigment particles and the fluids in which they are suspended may move, quite independently of the circulation. It is very probable, if not certain, that the contents of all cells undergo changes similar to those which will be described immediately, but owing to the absence of coloured particles and the consequent homogeneous appearance of their contents, the movements cannot be demonstrated. It is different, how-



ever, with the pigment cells. The dark pigment granules contrast strongly with the surrounding colourless fluid and cell membrane, so that any alteration of position which they may experience can be very easily observed.

We have already remarked that the frog is capable of changing from a dark, almost black, hue to a comparatively light appearance, and *vice versa*; and this is effected by a change of position of the pigment molecules in the cells. When the pigment granules are aggregated closely together in the cavity of the cell so as to form, under the microscope, a more or less rounded spot, the colour of the frog is light; when diffused through the cell, and in part through the tubular processes, the colour is darker; and when the pigments are still further scattered through the various ramifications of the cell, so that comparatively few remain in the central portion of the cell, the colour of the frog is almost black. Of course, there are some frogs which are never of a dark colour, but we always find that, without exception, the colour of the frog is darkest the more diffused the pigment granules are through the tubular processes of the cells, and lightest the more concentrated they are in the central portion of the cell. It was supposed by Brucke and Von Wittich that when the pigment was aggregated in the central portion of the cell this was effected by a shortening or contraction of the processes of the cell in which it was diffused, but this supposition was first shown to be erroneous by Lister (*Op. cit.*) On careful examination we find that the pigment moves from and towards the central portion of the cell quite independent of any change in the form and dimension of the cell and its processes. On the contrary, the pigment granules appear to be under the influence of a force or forces which reside in the central part of the cell, while at the same time they take place to a certain extent under the influence of the nervous system. If, for example, the frog be excited by laying hold of it so as to cause it to struggle, the pigment immediately becomes collected in the central part of the cell, and the animal turns pale. Again, if the animal is brought from a dark place, and exposed to a bright light, the same thing takes place; not as has been shown by the light stimulating the pigment cell directly, but by reflex action, through the medium of the optic nerve. In this case the stimulus of light is conveyed by the optic nerves to the nerve centres, and is thence reflected or sent to the nerves of the skin, and apparently exciting the pigment cells to action, cause concentration of the pigment in the central part of the cell. Concentration of the pigment in any given cell may, besides, be occasioned by gently irritating the part either mechanically or by chemical reagents. On the other hand, diffusion of the pigment into the processes of the cells appears to take place when the parts are in a state of quiescence, and seems to be caused by

the particles having a repellent action on each other, which comes into operation as soon as the attractive force which is seated in the centre of the central portion ceases to be exerted with intensity sufficient to keep the granules together.

Having thus endeavoured to describe as briefly as possible the nature of these pigmentary movements, let us next consider them when a part in which the cells are seated has been irritated to such a degree as to cause inflammation. We have already seen that one result of irritating a part to such an extent as to give rise to inflammation is to cause viscosity of the blood corpuscles, and in this way to hinder the circulation, notwithstanding that the calibre of the vessels is greater than usual. If now we irritate strongly a small portion of the web of the frog's foot by placing a drop of turpentine or a little mustard on it, we shall find a remarkable difference in the behaviour of those pigment cells which are seated directly under the irritant from those which are situated at a little distance. Let us suppose that at the commencement of the experiment the web is dark and the pigment consequently diffused throughout the processes of the cells, we shall find that while the pigment still remains in a state of diffusion in those cells which are placed nearest the irritant, it becomes concentrated in those cells which are further removed from the irritant, and on which the irritant acts with comparative mildness. On continuing to watch the web, it is found that no movements take place in these cells which are situated at the point of the irritation. The pigment granules remain in the same state as they were at the moment of the application of the irritant, while the surrounding cells which were more gently stimulated exhibit movements of their molecules as usual.

It may now be asked what is the cause of the stoppage of the molecular movements in those cells seated at the point of irritation. We have seen that the molecular movements are in all probability caused by a force which resides in the centre of the cell. We are, therefore, forced to the conclusion that the movements in question are destroyed by the irritant acting so strongly as to paralyse the central force. If the irritation, however, has not been too great nor too long applied, the central force recovers its power, and the pigment again exhibits its usual movements; at the same time, the part begins to swell from the formation of the fibrine and the effusion of serum, and the various signs and symptoms of inflammation ensue. Bearing in mind that what takes place in the pigment cells likewise takes place in all the other cells of the part, we come to the conclusion that the *first stage of inflammation consists in paralysis of the functions of the part*, and it is owing to this that the blood corpuscles, which flow through the part, become viscid, and stop the circulation; in the same way as they become viscid, and adhere to each other when removed from the ves-

sels and placed beyond the influence of the vital action of the textures. When the irritation has been so great as to cause *permanent* paralysis of the functions of the part, then mortification or death ensues. When the irritation has been more gentle, the part resumes after a time its functions, but in a disordered manner so as to give rise to the various phenomena of inflammation. The degree of these subsequent disorders is determined partly by the nature of the part, and partly by the amount of irritation and consequent paralysis of the functions of the part which has taken place. When the irritation has been slight, the reactionary phenomena will, *ceteris paribus*, be correspondingly mild; while if the irritation has been severe, suppuration, ulceration, &c., will take place, and the structure of the part will be destroyed to a greater or less extent.

### Scab.

We are apt to congratulate ourselves that scab, with many other evils, has disappeared before the improved practice of modern agriculture. But although usually comparatively circumscribed in all its attacks in this country, it is apt from time to time to spread, and occasion much trouble, expense and loss. Extensive graziers inform us that many of the English hill sheep are this spring infected, and that much care will be required to prevent the evil extending with the distribution of the stock which generally takes place during the next three months. Even as far south as the Cotswolds the plague appears, and large graziers and dealers assure us that they will take no sheep home without a full and explicit warranty of soundness.

Scab, as is now well ascertained, is nearly allied to mange in dogs and itch in man, and depends upon the presence of minute creatures—a species of *acarus* or mite—which burrow in the skin, causing the familiar distressing itching, the inveterate rubbing, and the irritable pimples skin, which, as the disease proceeds, becomes scurfy, bare, and scabbed. The unfortunate Highlandman of immortal fame, irritated by the “Scottish Fiddle,” as it is technically styled in the north, blessed the Duke of Argyle for his considerate erection of rubbing posts, and the sheep afflicted with scab make an equally liberal use of all objects against which they can rub, and in this manner the *acari* are frequently deposited, and transferred to the next visitor. The *acari* are of two sexes; the females, however, are the most active and troublesome, burrow at once in the skin, leaving as the mark of their entrance only a minute red speck, like the point of a pin. In eight or ten days a little swelling appears, which gradually softens and becomes pustular, and by the fifteenth or sixteenth day breaks, and allows the escape of the female, who appears with her brood of from eight to fifteen

young ones clinging round her legs. These are soon distributed, bury themselves in the skin, and if unchecked multiply with great rapidity. Warm weather is especially favorable to their propagation, and hence the spring weather generally aggravates and increases the complaint, and even causes its re-appearance in those cases which seemed during the colder months to be perfectly cured. Troublesome and provoking in every case, scab is especially so amongst ewes and lambs; for not only do the dressings disturb and annoy the ewe, but the offspring are frequently weakly, thrive badly, and soon show unmistakable evidence of the disease.

Shepherds often understand tolerably well the treatment of scab, and various dressings are in good repute. A mixture of tobacco water, oil of tar, and soft soap is very effectual, and, like any other applications, must be well rubbed in. It does not answer now to adopt the old prescription of allowing the “salve to sink to the sair;” it must be applied with smart and diligent friction. Four ounces of tobacco infused in hot water, a pint of oil of tar, a pound of tar, a pound of soft soap, will, with the addition of water, make a gallon of dressing, or quantity sufficient for three score of ordinary sized sheep. A mixture of mercurial and iodine ointments, or an alternate dressing of each, is also a good application, but must be used with caution, especially in damp weather, as the mercury is apt to become absorbed, and cause slow poisoning. During the past month a gentleman in this neighborhood lost five ewes, which died apparently from the unduly liberal use of mercurial ointment applied for the cure of scab. Unlike the rest of the flock, these five had been subjected to a second dressing, and the shepherd, naturally anxious to get rid of the pest, was probably too liberal with his remedy. The weather, moreover, was afterwards wet, which might possibly facilitate the absorption of the poison and aggravate its injurious effects upon the system. The animals gradually became unthrifty and weak, lost flesh, and dwindled for five or six weeks, when four died, and one, being so hopelessly ill, was killed. We are told that the only notable appearances were wasting and paleness of the flesh, “soft rottenness” of the liver, and in the uterus a dead, swollen, partially putrid lamb. Cases of this description, and they are by no means uncommon, ought to render farmers more careful than they are in the use of remedies so potent as mercurial ointment. The articles mentioned by no means exhaust the list of agents employed in scab. The old-fashioned sulphur ointments or liniments are still in use, but not very trustworthy; solution of chloride of lime, or bleaching powder, is also recommended, but is less effectual than solutions of arsenic, corrosive sublimate, chloride of zinc, or the other remedies already advised. In addition to the medical treatment, entire separation of



the sound from the tainted stock, must of course, be strictly enjoined, and as the acari, deposited about the bark of trees, or on other such objects, will in mild weather retain their vitality for some days, no sound sheep should, for at least a fortnight, have access to the fields from which the scabbed stock have been removed.—*North British Agriculturist.*

## Miscellaneous.

### The Horse-Hair.

In Professor Agassiz's interesting paper on "Methods of Study in Natural History," the second of the series in the *Atlantic Monthly*, we find this anecdote of an animal known to almost all country boys :

A gentleman from Detroit had the kindness to send me one of those long, thread-like worms (*Gordius*) found often in brooks, and called horse-hair by the common people. When I first received it, it was coiled up in a close roll at the bottom of the bottle, filled with fresh water, that contained it, and looked more like a little tangle of black sewing silk than anything else. Wishing to unwind it, that I might examine its entire length, I placed it in a large china basin filled with water, and proceeded very gently to disentangle its coils, when I perceived that the animal had twisted itself around a bundle of its eggs, holding them fast in a close embrace. In the process of unwinding, the eggs dropped away and floated to a little distance. Having finally stretched it out to its full length, perhaps half a yard, I sat watching to see if this singular being that looked like a long, black thread in water, would give any signs of life. Almost immediately it moved towards the bundle of eggs, and, having reached it, began to sew itself through and through the little white mass, passing one end of its body through it, and then returning to make another stitch, as it were, till the eggs were at last entangled again in an intricate net-work of coils. It seemed to me almost impossible that this care of offspring could be the result of any instinct of affection in a creature of so low an organization, and I again separated it from the eggs, and placed them at a greater distance, when the same action was repeated.

On trying the experiment a third time, the bundle of eggs had become lessened, and a few of them dropped off singly into the water. The efforts which the animal then made to recover the missing ones, winding itself round and round them, but failing to bring them into the fold with the rest, because they were too small, and evaded all efforts to secure them, when once parted from the first little compact mass, convinced me that there was a definite purpose in its attempt, and that even a being so low in the scale of animal existence has some dim consci-

ousness of a relation to its offspring. I afterwards unwound also the mass of eggs, which, when coiled up as I first saw it, made a roll of white substance about the size of a coffee-bean, and found that it consisted of a string of eggs, measuring more than twelve feet in length, the eggs being held together by some gelatinous substance that cemented them and prevented them from falling apart. Cutting this string across, and placing a small section under the microscope, I counted on one surface of such a cut from seventy to seventy-five eggs; and estimating the entire number of eggs according to the number contained on such a surface, I found that there were not less than eight millions of eggs in the whole string.

**MANAGEMENT OF DOGS.**—Dogs kept constantly in the house must be let out four or five times a day for a few minutes, otherwise it is cruel to punish them for want of cleanliness. All dogs, whether long or short haired, are better for being brushed once a day; it conduces to the health, and greatly increases the comfort of the animal. A dog who is well brushed regularly, seldom requires washing, and is never infested with vermin; but if the dog is to be washed let it be done with yokes of eggs and not with soap, which irritates the skin, inflames the eyes, and by temporarily depriving the skin of its natural oily secretion, makes the dog extremely liable to be chilled afterwards. The washing with the yoke of eggs may be managed as follows:—Let the dog stand in an empty tub, rub the yolks of two, four, or more eggs by degrees into his coat, adding lukewarm water a little, until the dog is covered with a thick lather. When it is well rubbed in over the whole coat, pour clean warm water over the dog till the egg is entirely washed out. The advantages of this process are, that the dog's coat does not lose its glossy appearance afterwards, and that the whole operation can be performed quickly and quietly, and without any splashing of water or rough handling. To remove fleas, take enough soft soap to rub into the whole coat of the dog; add to this a teaspoonful more or less, according to the size of the dog, of spirits of turpentine; rub this mixture well into the roots of the hair, adding a little warm water to make it reach the skin. Let this remain on for a quarter of an hour, then plunge the dog into a warm bath, and rub off the mixture with the hand. Care should be taken not to let it get into the eyes, and to wash it completely out of the skin.—*House Dogs and Sporting Dogs; by J. Meyrick.*

**GOSSIP ABOUT COACHES.**—The Egyptians used a car or box, upon wheels, and the word "coach" is supposed to be of Hungarian origin. In 1294 the citizen wives of Paris rode in them. The oldest (used by ladies) were called whirlicotes, or open cars. The mother of Richard II. rode in one; and in 1474 the Emperor Frederick III.

went to Frankfort in one. Stow says William Boone, a Dutchman, in the sixteenth century introduced coaches into England; while Strutt, in his *Manners and Customs of the English*, says that Walter Ripon in 1555, made for the Earl of Rutland the first coach in England. The Duke of Buckingham, in 1619, was the first to have a coach drawn by six horses, but he was eclipsed by the Duke of Northumberland, who drove eight in ridicule. State coaches gilt are mentioned in 1609. Charles I., had one, and specimens can now be seen in the Lord Mayor's "Gingerbread," and her Majesty's gilded one-Stage coaches gilt are mentioned 1664, and Sorbriere (1664-70) says he went in one from Dover to London, "drawn by six horses one before another," but this is what we should now term a waggon. Fosbroke gives a list of thirty different kinds of coaches, and our friend Taylor in 1623 writes that he heard of "a gentlewoman who sent her man from Charing-cross to Smithfield to hire a coach to carry her to Whitehall; another did the like from Ludgate-hill to be carried to see a play at the Blackfriars." In 1634 one Capt. Bailey established the first hackney coach stand in London. He set four coaches with men in livery by the Strand May Pole, and this example being soon followed by others, a writer of the time adds that "sometimes there are twenty of them together, which disperse up and down," and he frequently adds, that "everybody is much pleased with it."—(Garrard) In 1636, there were more than 6,000 hackney-coaches in London, a proof of the public's appreciation; but in 1660, Charles II. issued a proclamation forbidding their stopping in the streets, for that they must be hired from the stables, &c. The *Weekly Register*, December 8, 1773, tells us that "these hackney gentlemen who drive about the city and suburbs of London, have by their overgrown insolence obliged the Government to take notice of them." The *Gentleman's Magazine* records, that on September 23, 1751, a man ran a coach wheel from the Old Bailey to the eleven mile-stone at Burnet and back in three hours fifty-one minutes, for £50. He had four hours to do it in. By statute 3rd Geo. I. c. 7, sec. 2, 800 hackney coaches were licensed at 5s. each weekly.—*City Press*.

**POTATO BLIGHT.**—M. Lemaire advocates coal tar as a preservative against the potato blight. He incorporates two parts of coal tar with 100 parts of dry and loose earth, and strews this mixture over the ground to be planted with potatoes, after which the field is ploughed or dug in the usual way. In this manner the coal tar is buried to the depth of 20 centimeters or thereabouts, and the potatoes planted in it thrive perfectly, and are never attacked with the blight. Mr. Lemaire has also made the discovery that potatoes planted in a part of the same field, which had been purposely left without coal tar, contracted the disease at the same time that the others were free.—*Galignana*.

**A LIVING FROG FOUND IN COAL.**—The following is an extract from a letter received on Wednesday last in this city, by John Russell, Esq., from the manager of his Try Nicholis Colliery, Com Tytery, near Newport:—"Our men in the heading in the rock vein coal yesterday, March 10, in the fall of coal in the face of the heading, found in a hole in the pricking, in the top of the coal and in the nine-inch bed of coal, a live frog. The hole was not more than 3½ inches in diameter and this found in a soft holding. There is a slight hollow over the coal where it was found. It began moving about as soon as it was released, but seems larger and more lively to-day. It is kept shut up in clay to exclude the air from it. Now this is 200 yards below the surface, where this little thing was found, and I do not suppose any one can form an idea how long it must have been there. I intended having it kept for you until you returned"—(Signed) L. W. Rees. [Mr. Russell is going to send to the Great Exhibition a block of coal, between ten and eleven feet long, selecting the piece in which the frog was found, the *locus in quo* being exactly in the centre and the block will be so cut out that the frog and its strange domicile will be clearly shown in front]—*Worcestershire Chronicle*.

**SUNSET AMONG THE ICEBERGS.**—The book is open to record. The sun on the rugged hills of Labrador, a golden dome; Bell Isle, a rocky blue mass, with a wavy outline, rising from the purple main pricked with icebergs, some a pure white, others flaming in the resplendent sunset like red-hot metal. We are sailing quietly as an eagle on the still air. Our English friends are heard singing while they walk the deck, and look off upon the lonesome land where their home is waiting for them. All that we anticipated of the sunset, or after-sunset, is now present. The ocean, with its waves of Tyrian dye laced with silver, the tinted bergs, the dark blue inland hills and brown headlands underlie a sky of unutterable beauty. The west is all one paradise of colours. Surely, Nature, if she follows as a mourner on the footsteps of the fall, also returns jubilant and glorious to the scenes of Eden. Here, between the white light of day and the dark of the true evening, shade and brightness, like Jacob and the angel, now meet and wrestle for the mastery. Close down among the gloomy purple of the rugged earth, beam the brightest lemon hues, soon deepening into the richest orange, with scattered tints of new straw, freshly-blown lilacs, young peas, pearl and blue intermingled. Above are the royal draperies of the twilight skies. Clouds in silken threads and skeins; broad velvet belts and ample folds black as night, but pierced, and steeped, and edged with flaming gold, scarlet and crimson, crimson deep as blood, crimson fleeces; plumes tinged with pink, and tipped with fire, white fire. And all this glory lies sleeping on the shore, only on,



the near shore of the great ethereal ocean, in the depths of which are melted and poured out ruby sapphire, and emerald, pearl and gold, with the living moist blue of human eyes. The painter gazes with speechless, loving wonder; and I whisper to myself, "This is the pathway home to an immortality of bliss and beauty." Of all the days of the year, this may be the birthday of the King-of-day, and this effulgence an imperial progress through the grand gate of the west. How the soul follows on in quiet joy, dreaming of lovely ones waiting at home, and lovely ones departed, waiting with Christ! Here comes that wondrous lines of Goethe, marching into the memory with glowing pomp: "The setting sun! he bands and sinks—the day is over-lived. Yonder he hurries off, and quickens other life. Oh! that I have no wing to lift me from the ground, to struggle after, for ever after him! I should see in everlasting evening beams, the stilly world at my feet, every height on fire, every vale in repose, the silver brook flowing into golden streams. The rugged mountain, with all its dark defiles, would not then break my godlike course. Already the sea, with its heated bays, opens on my enraptured sight. Yet the god seems at last to sink away. But a new impulse wakes. I hurry on to drink his everlasting light—the day before me and the night behind—the heavens above, and under me the waves. A glorious dream! as it is passing he is gone." Here come the last touches of the living colouring, tinging the purple waves around the vessel. Under the icebergs hang their pale and spectral images, piercing the depths with their mimic spires, and giving them a lustrous, aerial appearance. The wind is lulling, and we rise and fall gracefully on the rolling plain. "The day is fading into the later twilight, and the twilight into the solemn darkness." No, not into darkness; for in these months, the faint flame flickering all night above the white ashes of day from the west circling around to the north and east, the moonlight and the starlight and the northern light; all conspire to make the night, if not more beloved than day," at least very lovely. A gloomy duskiness drapes the capes, beneath the solitary cliffs of which lies half entombed a scattered iceberg, a ghostly wreck, around whose dead, white ruins the mad surf springs up and flings abroad its ghastly arms. Softly comes its sad moaning, and blends with the plaintive melodies of the ocean. Hark! a sullen roar booms across the dusky sea—nature's burial service and the funeral guns. A tower of the old iceberg of the cape has tumbled into the billows. We gather presently into the cabin for prayer, and so the first scene closes on the coast of Labrador. —*Rev. Lewis Nobles' Iceland.*

**PREVENTION OF SEA-SICKNESS.**—Let a person on shipboard, when the vessel is bounding over the waves, seat himself, and take hold of a tumbler nearly filled with water or other liquid, and

at the same time make an effort to prevent the liquid from running over by keeping the mouth of the glass horizontal, or nearly so. When doing this, from the motion of the vessel, his hand and arm will seem to be drawn into different positions, as if the glass were attracted by a powerful magnet. Continuing his efforts to keep the mouth of the glass horizontal, let him allow his hand, arm, and body to go through the various movements—as those observed in sawing planing, pumping, throwing a quoit, &c.—which they will be impelled, without fatigue, almost irresistibly to perform; and he will find that this has the effect of preventing the giddiness and nausea that the rolling and tossing of the vessel have a tendency to produce in inexperienced voyagers.—*Albionæum*

**THE JAY'S VOLUBILITY.**—One of the most remarkable peculiarities of the jay is the volubility of their sounds. The alarm note the bird utters on the appearance of danger, or even of a stranger in its haunts, is extremely harsh; but it has a love note peculiarly soft, "yet so low and apparently cautious, that it seems whispering to its mate, as if to hide their affections and labours from the other tenants of the grove. Even then it is very imitative, and though it does not attempt the songs of the warblers, it is very adroit at bleating, screaming, neighing, and in short, imitating all the harsher sounds." Bewick says: "We have heard one imitate the sound made by the action of a saw so exactly, that though it was on a Sunday, we could be persuaded that the person who kept it had not a carpenter at work in the house. Another, at the approach of cattle, had learned to hound a cur dog upon them, by whistling and calling upon him by name. At last, during a severe frost, the dog was excited to bite a cow big with calf, when the poor animal fell on the ice, and was much hurt. The jay was complained as a nuisance, and its owner was obliged to destroy it." Mudie, another careful observer, remarks: "Words in which the letter r occurs soonest learned, not only by the jay, but by most birds that can be taught to articulate." That is easily accounted for by the unyielding nature of the mandible which forces the air to come out between the upper part of the tongue and the palate, on which that trills. A man cannot easily pronounce the r in any but Northumberland fashion, if he grins the while; and those who use the tongue simpering and softly merely touch, but do not pronounce it.—*Cassell's Popular Natural History.*

**ORIGINAL ANECDOTE OF BURNS.**—As Lord Crawford and Lord Boyd were one day walking over the lands in Ayrshire, they saw Burns ploughing in a field hard by. Lord Crawford said to Lord Boyd, "Do you see that rough-looking fellow across there with the plough? I will bet you a wager you cannot say anything to him

that he will not make a rhyme of." "Done said the other; and immediately going up to the hedge, Lord Boyd cried out, "*Baugh!*" Burns stopped at once, leant against the plough, and, surveying his assailant from head to foot, he quietly answered—

"It's not Lord Crawford, but Lord Boyd,  
Of grace and manners he is void—  
Just like a bull among the rye,  
Cries "*Baugh!*" at folks as he goes by."  
The wager was of course won.

### Editorial Notices, &c.

#### Provincial Exhibition at Toronto, 22nd to 26th September, 1862.

In our last issue we were unable to announce decisively the exact days on which the Provincial Exhibition would take place this year, in consequence of it having been discovered that the days which had been chosen by the Board were the same as those selected by the New York State Society for their show at Rochester this year. As it was, of course, desirable to avoid a collision of dates if possible, some correspondence, as stated in our last, took place with a view to a satisfactory arrangement.

As it appears from the correspondence that the New York Society had published their list, and made various arrangements which would render it exceedingly difficult to change their days, the Upper Canada Board of Agriculture, after full consideration of the subject, decided that our Show should take place one week earlier than first intended, viz., during the week, commencing on Monday, September 22nd. The Exhibition will accordingly be held at Toronto, this year, on the days above stated: 22nd, 23rd, 24th, 25th and 26th September. It would be seen in our last that the rules or regulations, connected with the Exhibition have been remodelled and amended, and some new prizes offered. We shall have some remarks to offer on these points on another occasion.

#### BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.  
HUGH C. THOMSON,  
Toronto, 1861. Secretary.

#### FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,

Dover Court.

Toronto, Aug., 1861.

#### Notice of Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,

GEORGE W. BUCKLAND.

#### NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

#### THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862.

JOHN SNELL,

tf.

Edmonton, P. O., C. W.

#### IMPROVED BERKSHIRE PIGS

FOR SALE by Mr. Denison, Dover Court, Toronto.

Toronto, April, 1862.

#### A Thorough Bred 2 Year Old

#### AYRSHIRE BULL

FOR SALE, by Mr. Denison, Dover Court, Toronto.

April, 1862.



## GEORGE LESLIE, NURSERYMAN.

**OFFERS FOR SALE, THIS SPRING, A GENERAL assortment of Nursery Stock, consisting of**

|                              |     |  |
|------------------------------|-----|--|
| Apples, Standard and Dwarfs, |     |  |
| Cherries, do.                | do. |  |
| Pears, do.                   | do. |  |
| Plums, do.                   | do. |  |
| Peaches, do.                 | do. |  |
| Appricots and Nectarines,    |     |  |

## GRAPE VINES,

NATIVE AND FOREIGN.

**CURRENTS, GOOSEBERRIES, RASPBERRIES, BLACKBERRIES, STRAWBERRIES, &c., &c.**

The collection of fruits cultivated is extensive, and embraces all the different varieties that have been found of value, as well as those of late introduction.

The ornamental department is also extensive, consisting of Shade Trees, Shrubs, Roses, Hardy Herbaceous Plants, &c., &c., with a fine collection of Evergreens.

## LARGE TREES

FOR

### STREET PLANTING,

can be supplied, as also Evergreens, and Deciduous Plants for Hedges.

All the above are of **FIRST QUALITY**. Packing for a distance carefully performed by experienced hands.

All orders by post or left at the Nursery, will have prompt attention.

Catalogues forwarded gratis on receipt of one cent. stamps.

Address **GEORGE LESLIE,**  
Toronto Nurseries,  
Toronto.

**TORONTO NURSERIES,**  
April 1862.

## Seeds! Seeds!! Seeds!!!

**JOHN GEORGE WAITE**  
181 High Holborn, London, England.

**HAS THE LARGEST STOCK of VEGETABLE, AGRICULTURAL, and FLOWER-SEEDS, IN THE WORLD,** and can supply dealers on better terms than any other whose sale house, as he makes most extensive arrangements with none but experienced growers and produce his supply of seeds, which are raised and grown from stock selected under his own personal superintendence, and as they are all cleaned and picked in his own extensive warehouses by an auxiliary strength of several hundred men and women, kept for that purpose, he is enabled to recommend, with the greatest confidence, every description of Seed offered by him for sale, and he therefore invites Seed Dealers to apply for his Catalogue.

TERMS—Cash, or satisfactory reference in England.

March, 1862.

6t.

## Fresh Garden, Field, & Flower Seeds.

FOR SPRING SOWING.

**JAMES FLEMING & Co,** Seedsmen to the Agricultural Association of Upper Canada, beg to inform their friends, and the Farmers of Canada generally, that their stock of Fresh Seeds is now complete and very extensive, embracing almost every kind of seed suitable for the country. The stock of Agricultural Seeds is large and well selected. The vitality of each sort is carefully tested, and their genuineness may be fully relied upon. A large stock of Peas, Timothy, and Clover:

Spring Tares,  
" Wheat,  
Black and White Oats.  
Swede Turnips, Purple top.  
" " Green top.  
" " Laing's Improved.  
" " Skirving's Improved.  
White Globe Turnip.  
Yellow Aberdeen "  
" Altringham "  
Waite's Eclipse Turnip.  
Stubble or Six Weeks "  
Mangel, Long Red.  
" Long Yellow.  
" Yellow Globe.  
" Red Globe.  
" New Olive Shaped.  
Sugar Beet.  
Field Peas, several varieties.  
Marrowfats, " "  
Barley, two and four rowed.  
Buckwheat.  
Indian Corn, several varieties  
Alsike and White Clover.  
American Orchard Grass,  
Kentucky Blue Grass.  
English Rye Grass.  
French Lucern.  
Cow and Rib Grass.  
Carrot, White Belgian.  
" Long Orange.  
" Altringham.  
Parsnip, Hollow Crowned.  
&c., &c., &c.

Also a full and general assortment of all kinds of Garden Seeds: a Catalogue of which, with directions for sowing, can be had on application. Agricultural Societies ordering Seeds, will be supplied on liberal terms. Country Merchants supplied with complete assortments of Garden Seeds on Commission, neatly put up in boxes of 200 papers each, for retailing at five cents a paper. Also a large assortment of Flower Seeds, embracing the novelties of the season.

No. 126 Yonge Street, Toronto.

March, 1862.

4t.

## VETERINARY SURGEON.

ANDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

## The Imported Thorough-Bred Horse "Charon,"

WILL stand for Mares, at Mr. St. George's Farm, Second Concession, and travel as follows, from 1st May: He will leave his own stable on Monday at noon, proceeding down Yonge Street and stopping as required. Will remain at Steele's Tavern all night, will go on to Toronto on Tuesday morning, and stop till Wednesday at noon at Bond's Livery Stables. Will proceed to Weston, and stop there all night; return home on Friday, by Yonge Street; will remain all night at Steele's Tavern, and arrive at his own stable on Saturday morning.

CHARON is by "Archy," by "Camel," by "Whalebone," by "Waxy," by "Pot-8-o's," by "Eclipse," &c, &c. His dam, "Styx," was by "Defence," out of "Proserpine, &c. See Studd Book. Any one acquainted with the English Turf and Stud Book will see that there is not in America a better bred horse than Charon. His pedigree includes the most celebrated sires, and the most fashionable blood of England. Charon was in training for the Derby when he was purchased and brought to Canada. See Ruff's Guide.

TERMS: Season Mares, \$12; Single Leap, \$8; Thorough bred, \$20, and \$12, single leap; Groom's fee, 50 cents.

Mares will be taken into pasture, and carefully attended to on Moderate Terms.

Address H. Q. St. George, Esq, Oakridges Post Office.

Oakridges, April 17, 1862.

## FOR SALE.

A LOT of thorough bred ESSEX Pigs,—bred from recently imported 1st prize animals and have this season taken premiums at both Township, County, and Provincial Exhibitions.

JAMES COWAN.

Clochmor, Galt P. O., Oct. 19, 1861.

## Contents of this Number.

|                                                                             | PAGE. |
|-----------------------------------------------------------------------------|-------|
| The Swedish Turnips.....                                                    | 289   |
| Flax Culture.....                                                           | 291   |
| Remedy for Turnip Fly.....                                                  | 291   |
| Dairy Management and Mangel Wurzel.....                                     | 292   |
| Straw as Food.....                                                          | 295   |
| English Agriculture, as seen by an American.....                            | 297   |
| On the Aeration of soil.....                                                | 299   |
| Warranty of soundness in Horses.....                                        | 300   |
| Cultivation of the White Bean.....                                          | 303   |
| Benefit of Hogs among Fruit Trees.....                                      | 304   |
| AGRICULTURAL INTELLIGENCE:                                                  |       |
| Horticultural and other Shows this Season.....                              | 304   |
| Provincial and State Exhibitions, 1862.....                                 | 304   |
| Importation of Stock for Canada.....                                        | 304   |
| HORTICULTURAL:                                                              |       |
| The Early Short Horn Carrot.....                                            | 305   |
| Grafting Fruit Trees.....                                                   | 305   |
| Culture of Melons.....                                                      | 306   |
| THE DAIRY:                                                                  |       |
| How to make Cheese.....                                                     | 307   |
| DOMESTIC:                                                                   |       |
| Packing Eggs for Long Journeys.....                                         | 308   |
| THE POULTRY YARD:                                                           |       |
| How to make Hens Profitable.....                                            | 309   |
| THE APIARY:                                                                 |       |
| Bee Pastures.....                                                           | 310   |
| VETERINARY:                                                                 |       |
| Bots in Horses.....                                                         | 311   |
| Inflammation in Animals.....                                                | 312   |
| Scab in Sheep.....                                                          | 314   |
| MISCELLANEOUS:                                                              |       |
| The Horse Hair, Management of Dogs, Coaches.....                            | 315   |
| Potato Blight, A Living Frog in a Coal Seam, Sunset among the Icebergs..... | 316   |
| Prevention of Sea-sickness, The Jay, Anecdote of Burns.....                 | 317   |
| EDITORIAL NOTICES:                                                          |       |
| The Provincial Exhibition, &c., &c.....                                     | 318   |

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

Is published in Toronto on the 1st and 16th of each month.

Subscription—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

Editors—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA

VOL. XIV.

TORONTO, JUNE 1, 1862.

No. 11.

The Provincial Exhibition.

As announced in our last issue the holding of the Exhibition of the Agricultural Association of Upper Canada will take place in Toronto, September 23rd—26th—and preparations are now making to render the accommodation to all classes of exhibitors as ample and complete as possible. Hitherto there have been some grounds for complaint among farmers that the arrangements for the accommodation of cattle and other kinds of live-stock, have not been fully equal to the requirements of the case; a defect which it is believed will be remedied for the future, as extensive permanent buildings have now been erected in four of our principal cities; an expense that will not have to be incurred again, and leaving therefore each locality to make better and more extensive rangements for meeting the wants of the farmer, whose interests though not exclusive are confessedly the most important of any in these displays of the skill and industry of the country. Two new erections of a permanent character for the accommodation of horses and cattle are in the course of erection on the show grounds in Toronto and another in the proximity of the original exhibition building for the reception of the implements and putting machinery into motion. Pens for sheep, pigs, and poultry will be more convenient and ample than heretofore. And although it is confidently believed that the

amount of material in every department of our Provincial industry will be considerably larger this year than on any former occasion, the local committee in Toronto have commenced preparations on what is considered will prove a proportionate scale. In estimating the amount of accommodation required at these national competitions, there is a tendency as the exhibition grows in years to *improve in quality*, which after all is the main test of the character and utility of these great gatherings. It is in no point of view desirable that any thing be sent to a Provincial competition which is devoid of positive excellence; what might be considered as passable at a township or even a county show should be well considered before sending it to occupy valuable space in a Provincial display, which would be mainly made-up of what is really superior. We make these observations not with a view to discourage intending exhibitors, but rather to stimulate all such as have any thing really worth seeing to send it forward, that the *status* of our Provincial shows, the quality and excellencies of their material, may be progressively improved and elevated.

We would particularly call the attention of intending exhibitors and others interested in the exhibition to the rules and regulations appended to the prize list, as published in our last; copies of which are being printed in pamphlet form, to be circulated among agri-

cultural and mechanics' societies throughout the province. It will be seen that the departments of live stock and agricultural productions are to be this year thrown open to general competition, so that we may reasonably expect a number of competitors appearing from the adjacent British Provinces and the neighboring States.

### The Weather and the Crops.

Up to the date of this issue of our Journal the weather has been very favourable for getting in the spring crops, which work, with the exception of Swede Turnips, and some other fallow crops, may now be said to be completed. For Swede Turnips the first and second week in June, or say about the 10th of this month, has generally been found to be the best time of sowing, provided the weather and the state of the ground be suitable. For the growing crops this season there has been a great lack of moisture. In this portion of Canada, there can scarcely be said to have been more than one day's good rain since spring work commenced. Fall wheat generally looks pretty well, and did not suffer much from winter killing or late frosts, but spring wheat and other spring grains are seriously retarded for want of rain, and unless we soon have sufficiently copious showers the meadows will give but a short crop. An esteemed correspondent from West Northumberland writes us:—

"Our crops have been mostly all got in in good order, and, notwithstanding the spring was late, vegetation is as far advanced now as it usually is at this season of the year. The weather was favourable for getting in the crops well. Rain is wanted now, and unless we have some soon our hay crop will be light, indeed all crops want rain."

The accounts are pretty much the same from all parts of the country, west, as well as east, but we hope that a few days of plentiful rain may soon put a different face on the appearance of the fields. The Kingston Whig of a late date says:—

"Rain is badly needed, at least most farmers are crying out for it. Peas and potatoes are doing very well. In this section of Canada, the crops have been put in exceedingly well, and in ample time, the weather being very favourable for spring work. But the country wants rain badly, and the hay will suffer if rain does not

soon fall in abundance. As little winter wheat is sown in this neighbourhood, we can offer no opinion as to its state of forwardness, but have heard no complaints as yet. A large breadth of rye has been planted, and that looks well.

### Reply to the Address of Condolence to Her Majesty.

The following correspondence was inadvertently omitted in a previous issue of our journal. It is in acknowledgement of the Address of Condolence to Her Majesty, on the occasion of the death of the late Prince Consort, adopted at the convention of the Agricultural Association held in this city on 30th January last.

QUEBEC, 19th April, 1862.

Sir,

I am directed by the Governor General to transmit to you the enclosed copy of a despatch from the Secretary of State for the Colonies, conveying Her Majesty's gracious reply to the address of condolence from the Agricultural Association of Upper Canada.

I have the honour to be,  
&c., &c., &c.,

DENIS WILLEY,  
Governor's Secretary.

H. C. THOMSON, Esq.,  
&c. &c., &c.,  
Toronto.

[Copy No. 89.]

DOWNING STREET,  
4th April, 1862.

My Lord,

I have the honor to acknowledge the receipt of your Lordship's despatch No. 48, of the 14th ultimo, together with an address of condolence to the Queen from the Agricultural Association of Upper Canada.

I have to request that you will inform the Agricultural body from whom the address emanated that it has been laid before the Queen; and that Her Majesty was much impressed by the expression of sympathy and devotion.

I have, &c.,  
(Signed,) NEWCASTLE.

VICOUNT MONCK,  
Governor, &c., &c. &c.

### International Exhibition.

33 CLAPHAM RISE, S.,  
LONDON, ENGLAND,  
6th May, 1862.

Editor of the Canadian Agriculturist.

Sir,—Having arrived at Liverpool early on the morning of Saturday the 3rd instant, after a very pleasant voyage across the ocean, we



took the train at 9 a.m., and arrived at the Easton Station at 2 p.m., took a cab to our comfortable quarters as above, and on Monday 6th, I paid my first visit to the Exhibition. I found our Canadian Department presenting a very creditable appearance, and, from the extensive and well arranged specimens of mineralogy and woods, attracting much attention. The articles of the exhibition are not nearly all in their places yet, and the arrangement of the departments is not completed, but from the cursory observations I was able to make,—and I found every one who had an opportunity of making the comparison of the same opinion, it will as an exhibition far exceed that of 1851. I was particularly struck with the improvements in the Implement Department, to which I, as a matter of course, gave my first attention. There a great many new inventions of a very useful kind, and old inventions perfected and improved. Steam is brought largely into use in performing the most important operations. I only at present make general observations; when I have made a more particular examination, I may be able to give some details that will interest your readers. The English, Irish and Scotch manufacturers seem all to have exerted themselves most successfully in getting up a show of useful labor saving implements, which exceeds by ten times anything of the kind I have ever seen. Our neighbors, the Americans, notwithstanding all their difficulties, will make a very creditable appearance. Though they have not nearly so much on exhibition as in 1851, they have not more than one-fifth of the space they had on that occasion, and will in consequence make a better appearance. Their department is not yet complete in its arrangements. The French are also behind in their arrangements, but will have a splendid display. The articles on exhibition from Sheffield, Birmingham, Huddersfield, and indeed from all other parts of England, Scotland and Ireland are beyond description. The value is immense. One firm alone has more than a million pounds worth of articles on exhibition.

Australia makes a good show, particularly in her cereals. The grain is very superior.

I think I may safely say that the International Exhibition of 1862 will be an entire success. The building itself externally has not so elegant an appearance as its predecessor, but much taste and artistic skill have been displayed in its interior, and the effect will be very imposing and grand.

With respect to the appearance of this beautiful country at this season, it is most delightful. The trees in full foliage and bloom, the early sown grain covering the garden-like cultivated fields, the luxuriant grass, all produce a most pleasing effect. No finer season of the year could be selected for a visit to England than the month of May. The country is truly lovely, and must be seen to be appreciated.

We were unfortunate in not getting here in time for the opening of the exhibition. Owing to the delay on the railroad we were two days behind time in leaving Portland. The opening was a most splendid affair, as you will see by the English papers.

May 7th.

I yesterday again went to the Exhibition, and examined the Nova Scotia and New Brunswick departments. They are very good, many articles of superior quality. Vancouver's Island sends some of the finest grains I ever saw. The colonies generally are well represented. We went in the afternoon to Sydenham Palace, and were really enchanted with it. There is nothing can be imagined more delightful than the surrounding scenery. We have to go again to make an examination of those departments of the palace that we could not get through yesterday. The drive from where we are, about four and a half miles, is very fine; the fields are looking so beautifully green and luxuriant that it produces the most pleasing sensation to see them. There have been several showers within the past few days and the air is warm. Vegetation is rapid; the tares are fit to cut for food for animals, and you see loads of them carried about. The month of May has been, so far, all that could be desired, and the people seem to enjoy it.

This is rather an important day at the Exhibition, as the juries are to meet, some six hundred, and organize for the commencement of the general examination, which will probably occupy the whole of this month. Professor John Wilson is the party who has the general management of this matter. That gentleman occupies the same position on this occasion that he did in 1851. The organization is to commence to-day at 11 o'clock, and as I must now close in order that this may be in time for the mail, I will say no more at present.

Yours, &c.,

E. W. THOMSON.

#### SECOND LETTER.

London, May 12th, 1862.

Since I wrote last, there have been quantities of rain falling almost every day; and it has been somewhat cold, though not unusually so for the season, people say. The weather ten days since, I find now, was considered unusually warm. Notwithstanding that last week has been cold and wet, the trees and fields maintain their cheerful and delightful appearance. The exhibition attracts its thousands, and all who do not hold three guinea season tickets pay their five shillings entrance fee.

There is still a good deal to be done to get everything in its place; but there is enough in complete order to employ visitors for weeks in examining and admiring. The French de-

partment is one of the most attractive. The manner in which their Agricultural products are displayed is highly creditable to them, and exceedingly interesting. Australia is displaying most splendid samples of wheat, wool, and fancy woods. There is in that department a very novel article in the way of a machine for reaping, or rather gathering the wheat, and delivering it perfectly clean in a box, from which it may be bagged or deposited on a grain cloth. The straw, chaff and dust are left in the field and burned. The machine is not cumbersome; and, I am told by Australians, is found to be most efficient. It certainly is a valuable labor-saving machine, but would not answer where it is an object to save the straw. But in that country they do not require the straw, and therefore find it the best way to burn it, the ashes adding something to the fertility of the soil. The whole collection from Australia is very fine; and it is not to be wondered at that it attracts the attention of parties desirous of emigrating. The French department is still incomplete; but it is already very attractive, and will be much more so. The Austrian department is still behind, but will be good. Norway has a very fine display, particularly in woollen manufactured goods, in which it is amongst the best. Turkey will be well and creditably represented. I have no doubt it will be three weeks yet before all is arranged. There are still goods to arrive; and, although the time for receiving them has expired, they are receiving them notwithstanding, and every day unpacking and fitting up.

May 13th.

The Jurors are at work, but their progress is slow; and it will take a long time to get through all the classes. I am in Class 3, Sec. A, Agricultural Produce. The most of the Jurors are foreigners; but as they are able to make themselves understood in English, we get on very well. They are intelligent, and thoroughly understand what they are about. We were to-day in Tasmania and New Zealand; both of which colonies exhibit fine specimens of agricultural produce. The specimens of Indian Corn from New Zealand are very good, and in all the varieties I have seen of that grain, from the very small white to the largest horse-tooth variety. But I think the variety known with us as 12 Rowed Yellow is the best amongst them.

There is a good deal of novelty in the stuffed skins of animals and birds from all those southern colonies. The animals are also very attractive. Ornamental woods are also very well represented; but for the useful woods, for general and commercial purposes, it is generally admitted that Canada excels all other countries. Our collection in that department is exceedingly good. The wools

from the Australian Colonies attracted much attention, and deservedly so, for they are very fine. There are also many samples of cotton from the Southern Colonies, of various degrees of goodness; but I am not qualified to judge of their merits. We shall, doubtless, have the recorded opinion of the jurors by and by, as well as the result of their decisions upon all the fibrous substances, which are very numerous and from various countries; and amongst these Jamaica and some of the other West India Islands hold conspicuous places. Russia, Norway, Sweden, and some of the other portions of Europe will excel in fibrous productions.

A person visiting this grand display of the productive resources of the various countries of the earth, though returning daily, is impressed each day with wonder and admiration at the wonderful displays of the Divine goodness of the Great Ruler of the Universe who has so amply provided for the wants and for the gratification of the desires of the whole human race.

Your's, &c.,

E. W. THOMSON.

### On the Cultivation of Flax.

We have of late devoted considerable space in his journal to the culture and preparation of Flax, and as the subject is exciting more earnest and general attention than heretofore we lay before our readers the following remarks from the *Irish Farmer's Gazette* of May 3rd, which were drawn up by Mr. Thos. Berry, formerly steward to Lord Gormanstown, at the request of several parties in the County of Wilts, who were desirous of carrying on its cultivation. Mr. Berry grew last year in that part of England 182 acres of flax, a sample of which gained the first prize of £15, at the Royal Agricultural Society's Show at Leeds. Steam cultivation was employed in the preparation of the land, and the results were in every way most satisfactory. The following remarks embrace the details of the cultivation of Mr. Berry's prize crop, and will afford our readers some useful suggestions:

Being solicited by parties feeling desirous of growing flax (as an extra and remunerative crop) to state to them my method of preparing the soil, sowing the seed, and after management in preparing it for delivery to the flax mill, I most willingly comply with their request.

In the first place, the soil must be stirred 8 or 9 inches deep either with the plough or some sort of cultivator or grubber; many varieties of which last mentioned implements are now in use amongst agriculturists generally, and most of



them, I find, by going through the soil twice or thrice, will effectually move it to the requisite depth. I have found Bentall's cultivators to answer well for that purpose; and in preparing the land for flax, I much prefer them to ploughing it. Double the quantity of work can be done in one day with the same number of horses with the cultivators, than with ploughs, the soil is much more pulverised, and all weeds are brought to the surface. The plough turns the weeds under, if any, in the surface of the soil, which must afterwards be found, and only with considerable labour got out.

This deep tillage I should advise being done in the autumn, or as early in the spring as circumstances will admit of, being governed by the state of the soil; for the land generally becomes dry towards the middle of March, and from that period to the middle of May. The sowing of the flaxseed may, therefore, take place in the month of April, that being the month in which flax sowing is most extensively carried on throughout the United Kingdom.

If the soil got its first tilling in the autumn, or long previous to the time of sowing, the cultivators, or grubbers, as they are termed, large and fine harrows must be freely used, and rollers also as well, if the clods are *hard*, in order to *bring the surface to as fine a tilth as possible*; in fact, the tilth cannot be *too fine*. If the surface after the several harrowings be still rough and hard, the rollers used cannot be too heavy. When the soil is very dry, two or three horse rollers will be found to be required, and if used most frequently after the harrowing, will produce the very best results, in speedily pulverizing the soil sufficiently fine for the reception of the seed. The surface should always be rolled the last thing previous to the seed being sown with seed troughs or seed barrows (so called in some parts of this country), at the rate of two bushels per acre, statute measure. Two men, with a couple of these machines, will sow from 20 to 30 acres daily. I should insist on their going over *all* the ground, one of them wheeling his machine, say from north to south, the other from east to west—each man being provided with marking poles to guide the width and to which he should wheel quite straight to each, sowing after the rate of one bushel per acre with each machine. The reason of this cross sowing is for the purpose of having the seed distributed quite regular on the rolled surface of the soil; as a most important point is, by this process to obtain an even and good quality, as well as a full average crop of fine flax. When the two men have completed the *first* square of a few acres, the other men and boys will commence harrowing and rolling, to finish with, first harrowing in the seed with the finest seed harrows that can be procured, and if fine seed harrows cannot be had, chain harrows in most cases will answer the purpose quite as well. The seed does not require

being covered more than one inch beneath the surface by the seed harrows. I would suggest rather *less* than *more*, as the surface must be well rolled afterwards, if the land be *dry*, such being the last process of sowing. If the land be very dry, the heavier the roller the better; the dry or moist state of the soil must be the guide for the rolling, whether light or heavy rollers be used throughout the whole process of working the land during the sowing.

Flax is sometimes drilled an inch deep and six inches wide, at the rate of from  $1\frac{1}{2}$  bushels to 2 bushels per acre: this method affords an opportunity of hoeing the weeds with very small and narrow hoes; not more than 2 inches wide. When the ground is perfectly dry this last operation should be performed. When the flax crop is under a foot in height a good number of hands should be put at the work (that is, when the weather and soil permit of the hoers and weeders executing their work), as all the flax sown otherwise than by the drill must be weeded by the hands, and not with hoes. I scarcely need to mention that all the weeds that are accumulated on the surface of the ground under preparation for the reception of the flax seed should be gathered up and taken off; the implements found most useful for that purpose are chain-harrows, horse-rakes, hand-couch rakes and 3 and 4 prong forks—the latter for putting it into the carts. I have described the preceding operations as being performed by *manual* and *horse* labour; but the preparation of the soil for the sowing of the seed can be more fully carried out by steam cultivation.

I prepared, in the year 1861, more than 100 acres by the use of steam, and upwards of 82 acres by horse and manual power, for the flax crops produced at Horton, Wilts. The crop there was very superior, indeed, both as to quantity and quality, and for a specimen of which a first prize of £15 was awarded to T. L. Henly, Esq., of Calne, Wilts, at the R. A. S. show at Leeds in that year. The crop is fit to pull in the month of July, or early in August, which takes place when the seed balls are found to turn from a *green* to a *pale brown* colour, and the stalk turned *yellow* two-thirds up its whole length. The cost of pulling flax is from 10s to 20s. per acre; but the cleaner the crops are from weeds, so much less will the charge of pulling it be than the latter sum named.

The flax, when sufficiently ripe, as before described, is pulled by holding the tops of the flax in one hand, the other being placed about half-way down the handful of flax straw; it is pulled with a jerk, and if any dirt adheres to the roots of the flax a blow or two against the leg of the person pulling, in most cases, will cause it to drop off, a very desirable thing, as dirt amongst the flax and seed is very injurious. The handful of flax that is pulled is laid on a band of 9 or 10 flax straws—handful succeeding handful until a sufficient quantity is on the band; then when

tied the same as wheat makes a small sheaf of about 18 or 20 inches in circumference. The sheaves are stooked the same as wheat sheaves, of from 10 to 12 in a stook, but there are some who prefer stooking only 6 sheaves in a stook; in both cases the stooks should be turned if one side is more ready than the other to carry and rick, that each side of it may have an equal share of the sun to dry the fibre. The object of putting only 6 sheaves in the stook is, because of the convenience of pitching them in one forkful on the cart or waggon when carried, and therefore prevents loss of seed, and it is also found to dry sooner than when a much larger quantity is put together in stooks. The flax, when only a *small* quantity is grown, is put in small *round* ricks. When a *large* quantity is grown, the flax is put in *square long* ricks, 10 feet wide at bottom, 8 or 10 feet high in the side, and then a short roof thatched as soon as finished. Or if not *immediately* thatched, it must be well covered to prevent wet getting to the flax. If such, however, should by neglect take place, then very considerable injury will most probably be found to be done to the flax in question. This system of carrying the flax without steeping it is for the warm water system of preparing flax at the manufactory, and when the grower disposes of his crop to the flax manufacturer, for which class these remarks are written.

After the crop of flax is carried, it will prove an excellent plan to skim the surface of the ground about 3 inches in depth with the common skim plough, Bentall's cultivator, or, in fact, any implement that will be found to perform the work in an efficient manner. Then harrow and cart off (or burn on the ground) all refuse flax and weeds that can be gathered up upon the surface. After all this is performed the ground can either be ploughed or worked by cultivators of steam or horse power. The land may then be sown with rape, late turnips, rye, or vetches, or planted with cabbages adapted for sheep feeding in the months of April and May; of these the thousand-headed cabbage ranks as one of the very first. The seed of this cabbage should be sown either in March or April, for planting out in the months of August or September. If the land be manured after the flax crop, the same as clover stubbles or lea are for wheat, as good a crop of wheat can be grown *after flax* as ever can be grown *after clover*. In proof of such being the fact, it will only be necessary for me to refer any party to see the present beautiful growing crop of wheat *after flax* on Townsend Farm, Horton, in the parish of Bishop's Cannings, near Devizes, in the county of Wilts.

The flax crop can be grown to yield an average crop on suitable soils almost after any other crop has preceded it. The soils best suited for its growth would be found to be strong loams and clay soils; the clays on chalk and limestone formation would prove as good as any chalk, or

limestone brash will be found to grow excellent crops of flax. Green sandy soil, I have no hesitation in stating, will also grow good flax crops. If the land be well prepared for the reception of flax seed, and the soil also suitable for that purpose, *it will be found that has more to do towards producing an average crop of flax than anything else has; a vast deal more so than manuring for it with bad tillage.* Lands heretofore were very rarely, indeed, manured for growing flax, although latterly I have known it in some cases to be done.

A good crop of flax can be grown after two white straw crops, (say, wheat and oats), producing three or four ton per acre on suitable soil. well tilled for the putting in of the flax seed. The flax always seems to me to answer well in following oats after grass and clover leas; and the best results, I am certain, have been proved to follow this course when adopted, in most instances, on many farms.

In the northern counties of Ireland, where more flax is found to be grown than in any other parts of the United Kingdom, the growers there make it a general practice, when their land is cleaned, to sow clover seed amongst their flax, and the growers' most sanguine expectations have always been realized by the system thus adopted. Crops of clover produced in this way are always found to be far better than those produced by any other method, which can be easily seen and proved by any observer who may be travelling through these districts. The same convincing proofs of the entire success of producing superior crops of clover in England have been witnessed, I know, in various parts thereof. I will here mention, by way of illustration, one instance only of the *fondness* which I know clover has of growing amongst the flax crop. J. Parry, Esq., of Allington, near Devizes, Wilts, sowed a field of flax in the year 1860. The crop proved to be a very superior one. In the following year, 1861, he mowed a crop of clover off the same field, without previously sowing any clover on that field. It was red clover, too, which makes it the more remarkable, it is found to be almost always more rare for *red* clover to come indigenous than *white*. When clover seed is grown with the flax crop, I would suggest that the land should be previously made perfectly clean, and freed from all couch in particular, and then it might be sown in the same quantity per acre as if sown with any other crop, and it should be observed that the clover seed is sown at the same time of sowing the flax seed, before the roller goes over the ground the last time, *i.e.*, after the flax seed has been harrowed in. The clover seed may also be sown after the flax crop has sprung up not exceeding six inches in height. When the clover seed is sown amongst the growing flax crop, it must be left on the surface, for the purpose of moist weather forcing its growth.



I have known that as good crops of clover as ever grew have been produced in this manner when sown with barley or oats. If the flax crop is drilled, the clover seed may be sown either before or after being hoed; if sown after the hoeing of the flax crop, the surface will generally be found to be sufficiently loose for the reception of the clover seed, which must be allowed to remain for the rain to strike it into the soil, which will then be found speedily to promote its growth.

Grass seeds may be sown at the same time as the clover seeds amongst the flax, or at a later period if preferred. Grass seeds are as advantageously sown when the flax crop is taken off the land in August as *previously* thereto, and in this case it gives the clover a better chance of keeping stock, as I have always found that the young grass does not, in *after* sowing, grow predominant over the clover, to destroy it. The clover grows and flourishes well after the flax is pulled.

Carrots are sometimes grown with the flax crop, and fair average crops, to my knowledge, have been produced by sowing from 3 lbs. to 4 lbs. of carrot seed broadcast per acre. In this case the carrot seed should be sown at the same time the flax seed is sown, previously to the last harrowing with the fine seed harrow and the *last* rolling. From 2 lbs. to 3 lbs. per acre may be drilled at two feet distance; and if the flax seed is drilled, the carrots must be drilled across the flax drills.

The variety of *red* carrot called the "Intermediate," is the best for sowing with the flax crop. This variety of carrot is well known by its dwarf top, which falls down on its hollow crown, which resembles the hollow-crowned parsnip. This carrot is found to be one of our very best for the vegetable markets, and is one of, if not the most nutritious for all kinds of farm live stock. If the carrot seed is sown where the flax seed is drilled, it should be sown fresh before the hoeing; and in both instances the seed should be soaked for 48 hours in water or liquid manure, 10 or 12 days previously to its being sown, which is done to cause its early growth, and to come up at the same time as the flax seed—an important point. When taken out of the water, or the water strained from it, the seed should then be mixed with sand or ashes, or both sand and ashes mixed together, and afterwards well rubbed with the hands. Its proportions are two pecks of sand and ashes to 1 lb. weight of carrot seed. This is the quantity generally used to cause the seed to separate, but more may be added if found to be requisite for the sowing or drilling of the carrot seed.

Drilling the carrot seed across flax drills is very convenient for thinning out the carrots to their proper distances, from 7 to 10 inches in the row.

Much prejudice once existed against the growing of flax in this country; but this will be now

seen to be an antiquated prejudice, handed down to us by our forefathers, who then knew but very little, or next akin to nothing, of the useful art of making manure, and still less of preparing artificial manures. They were in the habit of sowing the flax after they had exhausted the land to the very utmost by sowing cereal (or, more plainly speaking, white straw) crops, at that time not at all considering that they had exhausted their land, previously to the flax crop being sown thereon, and yet, strange to say, expected the land to yield a good crop of wheat after the flax crop; and when that desired object could not possibly be obtained, the flax crop was considered to be the sole cause of their disappointment.

If land has become exhausted by cropping, and *wheat* being the desideratum of the grower, after his flax crop has been secured and got in, he has then only to manure his land with farmyard manure, or with such artificials that are found to be the most suitable dressing for the wheat crop.

It must, I am sure, be obvious to any observant person that the *roots* of the *flax* are *not* so constructed as to exhaust any soil, the small (I may say), very fine tap roots only from 2½ to 3 inches long, with its beautiful thread-like fibres, about one inch long growing around it, has been satisfactorily proved by scientific men as not to exhaust the soil anything equal to our corn crops. The flax fibre is principally formed by atmospheric power.

Finally, *the advantages of growing flax* are:—The grower of flax gains a crop that is in many instances more profit to him than his *best wheat crop*; and that after his land will not yield to him a remunerative crop of any kind without the aid of manure (either from his fold-yard, or artificial). The clear profit of the flax crop will, I am persuaded, after selling it in the straw, enable him to purchase artificial manure for six times the quantity of land which his crop of flax grew upon, which is, let me say, a very considerable item of economy in farm expenditure, as well as combining many other advantages in the succeeding crop, as before explained; as also affording him the earliest opportunity of autumn tillage, if he choose to follow that after the flax crop be carried in August, or, perhaps, July, according as the season may be.

#### Dr. Letheby on Diseased Meat.

[We take the following extracts from Dr. Letheby's report, respecting the sale of diseased meat in London. The Doctor is the medical officer of health, and has been very energetic in the discharge of his important duties.—These are matters requiring to be looked after in the more populous towns of this continent.]

"In the course of the last fortnight the (dis-

cers have seized 4,763 lbs. meat, and 111 head of poultry and wild fowl, as unfit for human food. It consisted of 59 sheep, 3 calves, 14 pigs, 27 quarters of beef, and 45 joints of meat; 3,269 lb. of meat were diseased, 182 lb putrid, and 1,312 lb. were from animals that had died from natural causes. Some of this meat was little better than carrion, and having been condemned by the justice, he submitted that the the city solicitor should be instructed to take further proceedings. The practice of sending diseased meat to the city markets is again on the increase, and it was to be regretted that in a few cases the salesmen do not give the assistance to the officers which they ought. On Saturday last one of the inspectors seized the carcass of a sheep which had been slaughtered while in a state of acute disease, and had been sold as human food by Messrs. Bonser & Sons, of Newgate market. Those gentleman complained in a public manner of the act of the inspector, and stated that although the animal was diseased, and the meat not of first quality, it was, nevertheless, fit for human food. The terms and directions of the act of parliament are so precise, and the responsibility of the inspector's duty so serious, that he has no alternative but to seize such meat. By the 26th clause of the City of London Sewers Act, 1851, it is declared that if, after the seizure of such meat by an inspector, and upon further examination by him (the medical officer) it is found and declared to be diseased, or unsound, or unwholesome, or not fit for the food of man, 'the same shall be burned or destroyed, or otherwise disposed of in such a way as to prevent the same from being exposed for sale, or being used for the food of man. In the present case, the meat was not only diseased, but the animal had been killed while in a state of high fever from acute inflammation of the lungs and pleura, and was manifestly unfit for human food. This conclusion was derived, not merely from the fact that there were pleural adhesions between the lungs and chest, for these alone are of small importance, and are never regarded as serious signs when they are of old standing. It is rare, indeed, to find an animal entirely free from them, although its flesh may be in the soundest condition. They are, in fact, the signs of disease which have passed away. In the present case, however, the whole of the walls of the chest were covered with recently effused lymph, which was hanging upon them in pulpy threads. The pleura was in a state of active inflammation, and the animal, at the time of its death, was suffering from acute pleura-pneumonia.—The whole system, therefore, must have participated in the disease, and have been affected with concomitant fever. The meat of such an animal, however good it may appear, cannot be good for human food, and the inspector would be wanting in his duty if he had failed to seize

it. It may be that the disease had lasted but a short time, and that the act of a butcher had anticipated the wasting effects of the malady and the final process of nature; but none of these circumstances can render the flesh wholesome, or make it other than the act of parliament designates—'diseased and unsound.'—Unfortunately, it is a common practice with farmers and cow-keepers at the present time to slaughter animals afflicted with a hopeless disease, in order that their carcass may be saved for the shambles. There is hardly a cow-house in the metropolis which is not continually furnishing diseased animals to the butchers. Very recently these houses have been inspected by Mr. Gamgee, the principal of the Veterinary College in Edinburgh, and he has stated publicly, in the last number of the *Edinburgh Veterinary Review*, and elsewhere, that the diseased cows of the London cow-houses are invariably sent to the city slaughter-houses to be killed for food.—One cow-keeper of the city told him that, in July last, out of an average stock of 30 cows, he sent upwards of a score to the butchers.—Considering how prevalent disease has been for the last two or three years among the cows of London, it is very probable that thousands of animals have in this way been disposed of. The practice is not without danger; for although it may generally pass unnoticed, it now and then shows itself in an unmistakable manner. In the month of November, 1860, the effects were witnessed by the medical officer on rather a large scale. A quantity of cow beef was bought at Newgate Market by a sausage maker at Kingsland, and made up into sausages in the usual way. The meat was not of first quality; for the sausage-maker observed such meat never is, but is always quite second rate. It was part of a cow that had been sent to the butcher from the London cow-house. Epizootic diseases were prevalent at that time in the cow-houses of London, and it is very probable that the animal was affected with one of them. It was a lean cow, and had ceased to give milk. This was all the dealer would confess; but the flesh of the animal told a terrible story. Of 66 persons who partook of the sausages made from it, 64 were attacked with the symptoms of poisoning, and the severity of the symptoms were in direct proportions to the quantity eaten. In several cases where members of the family had not partaken of them, they alone escaped, and people far away from Kingsland, who had bought the sausages of a second dealer suffered likewise. The effects were those of an animal poison, they were sickness, purging, giddiness, great prostration of the vital powers, intense irritation of the bowels, and in one case death. The matter was referred to the medical officer by the coroner for investigation, and it was also fully inquired into by Dr. Tripe, the medical officer of health for the District where the accident occurred. Both were



of opinion that the effects were clearly due to the sausages ; and as the most careful chemical and microscopic examinations did not discover a trace of mineral or vegetable poison, the conclusion was that the meat of the sausages was unsound. With such a fact, and many others of a like description, before him, he should be wanting in his duty if he permitted the sale of diseased meat. He added that it was not an uncommon practice for butchers to dress for the market the bodies of animals that had not been slaughtered, but have died from accident or disease. This practice, he said, is equally reprehensible. About a month ago the matter was contested with Messrs Bonser & Sons, of Newgate Market, who sold the carcase of a dead sheep, as it is termed, for food. As in the present case, they insisted that the meat was sound and wholesome, although for aught he knew the sheep might have been accidentally poisoned with arsenical sheep-wash.

"The rules which he had laid down for the guidance of the inspectors in the matter are, that they are to seize the meat of all animals which have not been slaughtered by the butcher, but have died from accident or disease.— That they are to seize the meat of all animals killed while in a state of acute disease, or which have wasted from lingering illness ; and, lastly, that they are to seize it when unsound from putrefaction or disease.

"They were the wholesome rules that had been acted on from very early times, and are most religiously observed in the present day by the Hebrews, who have brought them down from the remotest antiquity. They are the rules of almost every continental state, and were strictly followed by the ædiles of ancient Rome. Finally, they are indicated, as well as sanctioned, by the laws of this city, and have been more or less observed in every town in all times. It can hardly, therefore, be said that the exercise of the authority of the commissioners of sewers in this matter is an innovation, or that the rights and privileges of the butchers' trade are unnecessarily interfered with ; and even if they were, it is proper to remember that the preservation of public health is above all such considerations,"

### Rearing Calves on Milk and Linseed Meal.

The following remarks on a very important department of farming, from a recent number of the *Irish Farmer's Gazette*, will be found to contain much that is suggestive and useful :

When a calf is first dropped it is covered with a thick slime which Dame Nature teaches the cow by instinct to cleanse by licking it off, and if she shows any disinclination, the country people, to induce her to do so, sprinkle it with a little salt and fine oatmeal. This is necessary for the calf's comfort, cleanliness and health, and is

thought by many usefully medicinal to the cow and on every account should be encouraged. If the calf is permitted to suck the cow it will be more difficult to make it take its meals from the pail, and also fret and annoy the cow, which will not give its milk freely but retain it for its offspring. But though it will be necessary to prevent the calf sucking its dam for these reasons, it should be fed on the cow's first milk or beestings, which nature designs as its most nutritious food ; and it is also medicinal, cleansing the bowels of the pent up meconium or fecal matter secreted there during its confinement in the womb. It should, therefore, get a sufficient portion of this naturally medicinal aliment four times a day, say a pint and a half at time, so as not to keep it fasting too long, and, at the same time, not to overload the stomach. The calf should get a portion of its own dam's milk as long as it retains its peculiar medicinal quality, which may be known by its coagulating upon being heated or boiled ; but older calves should not get any of it, as to them it would be hurtful.

After the calf is a week old a little skim milk may be gradually mixed with the new milk, and after a fortnight, a little fine oatmeal, bean, pea, or linseed meal mucilage may be added gradually, which will enable the industrious and economical housewife to save her milk for the production of butter or cheese, and rear her calves also.

No doubt but that the best and most proper food for the calf is its own dam's milk : for it is a true food, in which the components of nutrition are so nicely balanced by the all-wise and beneficent Creator as to set at nought all human compositions ; but it is of so much value for human consumption that it becomes necessary to economize it and make imitations of it, though at a very humble distance ; and thus it is that science comes to our aid. Professor Johnson says in his "Lectures on Agricultural Chemistry," "that while the calf is young, during the first two or three weeks, its bones and muscles chiefly grow. It requires the materials of these therefore, more than fat, and hence half the milk it gets at first may be skimmed, and a little bean meal may be mixed with it to add more of the *casein* or curd, out of which the muscles are formed. The costive effects of the bean meal are to be guarded against by occasional medicine if required. In the next stage more fat is necessary, and in the third week at latest, full milk should be given, and more milk than the mother supplies if the calf requires it ; or, instead of the cream, a less costly kind of fat may be used. Oil-cake finely crushed, or linseed meal, or even linseed oil, may supply at a cheap rate the fat which, in the form of cream, sells for money ; and instead of additional milk, bean meal in large quantities may be tried, and if cautiously and

skillfully used, the best effects on the size of the calf and the firmness of the meat may be anticipated."

This Scientific note from Professor Johnson has engaged the attention of many stock masters in Ireland, and amongst the rest, Mr. C. Beamish, of Cork, who adopted and brought it to a regular system on an extensive scale. His formula for compounding the mucilage is as follows:—Thirty quarts of boiling water are poured on three quarts of linseed meal and four quarts of bean meal. It is then covered up close; and in 24 hours added to 31 quarts of boiling water then on the fire, pouring it in slowly, and stirring it constantly to prevent lumps, with a perforated wooden paddle, so as to produce perfect incorporation. After boiling 30 minutes, the prepared mucilage or gruel is put by for use, and should be given blood or luke warm to the calves, mixing it in small quantities at first with the milk, say one fourth mucilage with three-fourths milk, progressively increasing it, so that by the end of a fortnight it will be in equal parts; by the end of the third week, one and a half mucilage to one part milk; by the end of the fourth week the mucilage may be given in double the quantity of milk, and skim milk substituted for new milk, and by the end of the sixth week, the mucilage may be gradually increased in the proportion of two and a half to one of milk, and from that out till the tenth week the milk may be gradually reduced, so that by that time they may be fed wholly on mucilage till they are fifteen or sixteen weeks old, when they may be weaned.

During all this time, if too early in the season to put out the calves, they should be comfortably housed, well ventilated, and kept perfectly sweet and clean, a little sweet hay tied in bundles, and suspended so that they may play with it, and learn to nibble and eat it, and a little pounded chalk, mixed with salt, given in troughs to lick at pleasure, which prevents acidity in the stomach, and the undue formation of cud; small lumps of linseed cake should also be given in troughs, which they will soon learn to suck, if a little pains are taken to put a bit in their mouths after they have taken their meals of milk and mucilage. When housed it will be advisable to have a separate pen for each calf of sufficient size to walk about, so that they don't get into the habit of sucking each other, and swallowing the hair, which, uniting with the curd, by the regurgitating process going on in the stomach, forms round balls, which are indigestible, and is the fertile cause of the death of many promising animals. The following scale of quantity of milk or milk and mucilage combined for each calf may be useful, but should be altered according to circumstances:—For the first week the calf may get from 3 to 4 quarts daily; from the second week, 4 to 5 quarts; the third and fourth weeks, 5 to

7 quarts; fifth and sixth weeks, 8 to 10 quarts; sixth to eight weeks, 10 to 12 quarts per day, and so on, increasing the quantity about 1 quart per week per calf till weaning time.

Some parties do not give so much liquid food per day, but make it up by giving them finely cut roots, dry oatmeal, &c., but the animals are much too young for such food, though they may get the minced roots, so as to train them into their use. Hay tea is an admirable thing also to mix with the mucilage and milk, as it contains a large amount of nutriment in a soluble form.

In the summer time the calves may be left out on the grass, both day and night, in a fortnight after they are calved, and fed as already described they should be in the house; but a warm, sheltered paddock should be provided for them, and in wet weather they should have access to a covered shed.

### Straw as Food.

By C. W. JOHNSON, F. R. S.

(Concluded from page 297.)

In one portion of this essay the Professor closely and elaborately examines the nutritive and non-nutritive portions of the various kinds of straw met with in the stack-yard. Of the non-nitrogenised or carbonaceous substances found in straw, he observes: "Their use in the animal economy is of a two-fold character—either to supply the materials for the formation of animal fat, or to support respiration, and consequently animal heat. These different carbonaceous substances are not, however, equally well adapted to either of these uses, and may be divided, according to the fitness and readiness with which they fulfil the one or the other functions, into—

1. Fat-producing substances.
2. Heat-producing or respiratory substances.
8. Indigestible substances.

"To the first belong the oil, fat, and waxy matter, which in straw, as already mentioned, seldom amount to much more than 1 per cent. Oily and fatty vegetable substances are eminently well adapted to the laying on of fat in animals, inasmuch as the composition of vegetable fat is analogous if not identical with the several kinds of fat in the bodies of animals. The fatty matters of food without undergoing much change, are therefore readily assimilated by the animal organism, and applied when given in excess to the storing up of animal fat. On the other hand, substances rich in starch are especially fitted to support respiration. Oily and fatty matters, however, when given with a scanty supply of starchy food, become available for the support of respiration; and again, gum, starch, and sugar, when given to fattening beasts to excess, are transformed into animal fat. There is thus no essential difference between the fatty or



starchy constituents of food in so far as their uses are concerned, but each according to circumstances can lend itself to the work which is the more peculiar province of the other. The proportion of carbon in fatty matter amounts to rather more than 80 per cent., and is much larger than in gum, sugar, or starch. Oil and fat, for this reason, are not only better producers of fat than starchy and sugary compounds, but are likewise more powerful agents for the support of respiration and the maintenance of animal heat—the heat generated in the body being proportionate to the amount of carbon consumed in a given time during respiration. Gum, sugar, mucilage, starch, and a few similar compounds may be represented as consisting of carbon and water only, and on account of the simplicity of their composition they are well adapted to support respiration. The quantity of carbon consumed by the respiration of animals varies at different times and in different species, according to the rapidity of their breathing and their mode of living. Under all circumstances, however, it is considerable, especially in the case of ruminating animals. Thus cows consume four-ninths of the carbon contained in their ordinary daily food by respiration, and throw it off in their exhalations in the form of carbonic-acid gas. Hence the absolute necessity of supplying large-sized animals with abundance of carbonaceous food."

The chemical analyses of various kinds of straw, by Professor Voelcker, form a very valuable portion of his report. It is only the general results of these that I shall attempt to bring together on this occasion; and this I shall do by giving the different amounts of soluble and insoluble matters which the straw examined by the Professor were proved to contain. This was the mode of examination originally adopted by George Sinclair, in his examinations of the different grasses cultivated in the grass garden at Woburn, the results of which are given in his valuable "*Hortus Gramineus Woburnensis*." This mode of determining the nutritive value of different grasses, observes Mr. Voelcker, by ascertaining the proportion of matters soluble in water, furnishes comparative results which enable us to form a tolerably good opinion of the feeding value of straw. Indeed I find that the more nutritious samples invariably produce the largest amount of watery extract. Straw in general he finds varies very materially in its feeding value; and this to a considerable extent is influenced by the degree of maturity it had attained before it was cut, the unripe being the most nutritious, the over-ripe straw the least so. He found in two samples of wheat straw, the one fairly ripe, the other over-ripe—

|                                  | RIPE, OVER-RIPE. |        |
|----------------------------------|------------------|--------|
| Water .....                      | 8.14             | 9.17   |
| Substances soluble in water ..   | 8.77             | 4.81   |
| Substances insoluble in water .. | 83.09            | 86.02  |
|                                  | 100.00           | 100.00 |

In wheat stubble gathered in December—

|                                     |        |
|-------------------------------------|--------|
| Water .....                         | 17.66  |
| Substances soluble in water .....   | 5.83   |
| Substances insoluble in water ..... | 79.51  |
|                                     | 100.00 |

Similar results were obtained from other straws; for instance, in barley straw dead ripe was found—

|                                |       |
|--------------------------------|-------|
| Water .....                    | 15.20 |
| Soluble organic matter .....   | 2.92  |
| “ inorganic .....              | 2.88  |
| Insoluble organic .....        | 77.62 |
| “ inorganic .....              | 1.38  |
| In barley straw not too ripe—  |       |
| Water .....                    | 17.50 |
| Substances soluble in water .. | 12.40 |
| “ insoluble .....              | 70.10 |

Then, again, in the case of oat straw examined in three different states of maturity, viz., when green, when fairly ripe, and when over ripe, the following results were obtained—

GREEN. RIPE. OVER-RIPE.

|                         |        |        |        |
|-------------------------|--------|--------|--------|
| Water .....             | 77.14  | 46.64  | 35.20  |
| Soluble organic mat. .. | 6.29   | 9.06   | 4.42   |
| “ inorganic ..          | 1.59   | 2.30   | 1.75   |
| Insoluble organic ..    | 14.72  | 40.28  | 55.48  |
| “ inorganic ..          | 0.26   | 1.72   | 3.15   |
|                         | 100.00 | 100.00 | 100.00 |

The most valuable of the ordinary straws is that of the pea. This was found to be composed of—

|                               |        |
|-------------------------------|--------|
| Water .....                   | 16.02  |
| Soluble organic matters ..... | 11.28  |
| “ inorganic “ .....           | 2.72   |
| Insoluble organic “ .....     | 67.77  |
| “ inorganic “ .....           | 2.21   |
|                               | 100.00 |

With regard to the nutritive value of bean straw, great indeed is the difference of opinion amongst practical men. If we may judge from the discordant results obtained by Way and by Voelcker, it is probable that bean straw varies very considerably in composition, as influenced by soils, seasons, and varieties. The bean straw of 1860 and 1861 was analysed by Professor Voelcker. He found 100 parts of each—

BEAN STRAW OF 1860.

|                              |       |
|------------------------------|-------|
| Water .....                  | 19.40 |
| Soluble organic matter ..... | 5.69  |
| “ organic “ .....            | 2.31  |
| Insoluble organic “ .....    | 71.20 |
| “ inorganic “ .....          | 1.40  |

BEAN STRAW OF 1861.

|                                |       |
|--------------------------------|-------|
| Water .....                    | 17.75 |
| Substances soluble in water .. | 6.86  |
| “ insoluble in water ..        | 75.39 |

The Professor adds, by way of comparison, the results of two analyses of hay—one well-made clover hay and the other good meadow hay. He found in 100 parts of these—

| CLOVER. MEADOW.      |       |    |       |
|----------------------|-------|----|-------|
| Water .....          | 20.50 | .. | 16.66 |
| Soluble organic mat. | 18.07 | .. | 17.79 |
| “ inorganic “        | 4.43  | .. | 4.37  |
| Insoluble organic “  | 54.38 | .. | 57.78 |
| “ inorganic “        | 2.62  | .. | 3.40  |

The general conclusion to which the Professor arrives, from the results of his laborious and valuable researches on straw, of which I have made but a very small abstract, are these (to give his own words): “Assuming the land and climate to be equally well adapted for producing in each case, and the crops to have been harvested in the same stage of maturity, I am induced to place the different kinds of straw in the following order, beginning with the most nutritious, and ending with the least valuable for feeding purposes:—

1. Pea haulm.
2. Oat Straw.
3. Bean staw with the pods.
4. Barley straw.
5. Wheat straw.
6. Bean straw without the pods.”

From careful researches like these, the young farmer will rarely fail to derive valuable materials for his profitable consideration. The very varying value of the straw of the same cereal, according to its unripe, ripe, and over-ripe state, may, in this period of extending stock keeping and increasing demand for food, lead him to make sundry valuable calculations; and this differing value of the different kinds of straw may in some instances have a considerable influence in the selection of his rotations. In any case he will arrive at a wise conclusion if he is convinced that there are valuable observations yet to be made, chemical researches of an increasing value, even upon a green blade of grass or a golden straw, which will continue to profitably excite the curiosity and reward the studies of the agriculturist.

### Manures for Grasses.

A thick carpet of such fine grasses as are seen in our old and rich lawns, is one of the most beautiful crops that can meet the eye. The great variety of species which are found in the best pastures flourish on the same spot for centuries, and grow without much or any care bestowed upon them by man. It is, generally speaking, only first or second class land that yields good permanent pastures. All the best and most nutritive grasses soon die out when the soil is poor and unsuitable. This in many cases does not seem to arise so much from an actual

deficiency of nutritive matters as from a certain condition of soil which does not maintain the roots in a healthy state. On a great many descriptions of land, the application of lime has a wonderful effect in lending vigour to worthless and worn-out lands when all other applications have comparatively little. One of the functions of this agent appears to assist in the healthy decomposition of the accumulating vegetable matter.

When inferior pastures arise from an actual deficient supply of mineral matters, such as phosphate of lime, the application of bones is well known to produce favorable results. The use of bones has been the right arm in increasing the productive powers of our rotation pastures, though, for obvious reasons, the effects are now usually much less marked on these than on turnips.

In the manuring of grasses and turnips with phosphate, a few well-marked characteristics of these crops ought to be kept in mind as guides to the economical use of the substance. The grasses in an old pasture field, or even those of the young layers of any of our rotations, have an ample staff of roots running through the soil. These are already in contact with the earthy food of plants, and can much more easily take up what they require than a plant like the turnip, which has all its roots to form, must grow fast, and meet with a corresponding liberal supply. This is the secret of the magical effects which a dressing of superphosphate often has upon young turnips. We have sometimes to dress liberally with phosphates or superphosphates, for the turnips, even when there is abundance of the fertilizing ingredient, to which they owe their efficacy already in the land.

It is quite different with our grasses, natural or artificial. By the permanent mass of roots which they leave in the soil, they can grow luxuriantly when the supply of phosphates is much more scanty. For this reason it is seldom that phosphates or superphosphates can be economically used either for pasture or hay, where the land is under a regular rotation. What of these substances remain, after the demands of the turnips and succeeding white crop have been satisfied, are usually far more than sufficient to produce full crops of grass, if nitrogenous manures are only used.

For these reasons, there is scarcely any crop to which nitrates or manures containing ammonia can be used with greater certainty than to grasses. Their roots, being thickly studded over the land, readily absorb these soluble manures when broadcasted over the surface. The very fact of rapid growth succeeding such application shows that the plants are obtaining a supply of the earthy matter they require.

The comparatively moderate price of the nitrate of soda of late years has caused it to be much more generally used for the grasses than



formerly. From one-and-a-half to three cwts. per acre is the common quantity applied. Where either the common or perennial ryegrass largely predominates in young layers, nothing will send up such a heavy crop as nitrate of soda. The best time for its application is just when vegetation has made a decided start.

On the other hand, when the red clover plants are more plentiful, Peruvian guano, which is less soluble, and comes more slowly into action, is usually considered better suited than nitrates. Autumn dressings of guano often strengthen the clover plants and make them keep a vigorous hold of the land. Guano, too, should be applied sooner in spring than nitrates in all cases, especially where clovers abound.

Red clover is a much slower growing plant than either Italian or common ryegrass. It does not, therefore, make so good a return for applications of nitrogenous manures. And, besides, while grown as a mixed crop, the true grasses sometimes rise so rapidly with liberal manurings that they often overtop and weaken by their shade their slower growing rivals. Were clovers grown alone they would be far more grateful for nitrogenous manures, but, being usually mixed with ryegrass, they are not placed upon an equal footing. This is all the more apparent when nitrates are used for a well mixed layer of grass seeds. In this case a full and well mixed crop of hay may be drawn up, but the clover roots are far more exhausted and less fitted for producing an aftermath than when guano is applied.

It ought always to be kept in mind that there is no special unfitness in clover for being benefitted by dressings of nitrogenous manures. Clover and ryegrass, as usually grown, have merely different capabilities for digesting or assimilating a certain amount of nitrogen in a given time. The difference in this respect between red clover and Italian ryegrass, which may be taken as representatives of two different families of plants, is not nearly so great as betwixt these two and other individuals of their respective families or orders. It is only a few of the many hundreds of grasses that respond to liberal treatment, and are therefore fit objects for cultivation. If a rich old lawn is dressed richly with nitrogenous manures, a few species grow up before all the others, and keep them out of view. Indeed, as in the animal so in the vegetable kingdom, each species has a limit or capacity of growth which cannot be exceeded. We have long ceased to look for the plants which will grow without manure, but, instead, for those which in some measure act the part of gluttons, and at the same time give a good account of what they are supplied with. No plant can, perhaps rival Italian ryegrass in this respect, for, when supplied with moisture and manure, it grows almost uninterruptedly throughoutspring, summer and autumn.—*Scottish Farmer.*

### The Earthworm—Its Use.

Reaumur calculated that the number of worms on the earth exceeds the grains of all kinds of corn used by man, and as, perhaps, there is in other animals so preyed upon without any diminution in numbers as the earthworm, the calculation may not be far wrong. Hedgehogs, frogs, and moles devour it; beetles pray upon it, and often *cast* their young on it—and but for the earthworm a large portion of the bird family would soon deteriorate or perish, for, with the exception of the finches, there is scarcely a bird, from the robin to the wild-goose, but eats it, and many, during open weather, live almost solely upon it. After a summer shower, the farm-yard ducks actually race against each other along the roadsides in search of it; and on wet days they each devour hundreds. All river fish feed to a great extent upon it; and wherever the river beds are of a clayey substance, worms are more plentiful than in *terra firma*.—The river worms are darker in colour and flatter as a whole than the earthworms, but so little do they differ in appearance that a novice could not tell the land from the waterworms. The worms in the water live under the embedded stones, and trout are generally on the watch to gobble them whenever they leave their abode; they even move and turn over the stones in search of worms and the larvæ of water flies.—When a flood comes, the stones are generally displaced in great numbers, and at such a time (in a river such as the Tweed, for instance) the worms must be dislodged and carried along the river bottom in tens of thousands; and it is for such food, too, that ducks are constantly *gumping* among river shallows; for, if watched, it will be seen that they insert their bills below, or move, mostly all the likely stones they pass. We have frequently turned up worms at a depth of about one foot in the rivers.

But though the worm yields a considerable amount of food to the birds and fish that grace the dinner table, it is much more beneficial to man as a fertilizer of the land. Subsisting on the earth through which it burrows, with an occasional meal from a decaying tuber or leaf, its pecculations from the husbandman are of the smallest nature; whereas it lightens "the earth's surface" by its burrowings, and thereby aids the spreading of the roots of all cereals and bulbs; and the burrows also carry down water after heavy rains, that, but for them, would often gather in surface-pools, and thereby injure the crops; and they also admit the air to the soil to a depth by which by natural means it could not reach. The earth ejected by them also tends to the improving of the soil; and instances are known whereby these droppings or "worm casts" caused in a few years, a considerable increase to the depth as well as the quality of the soil. Mr. Darwin, the naturalist, gives

an account of a case of this kind which he tested, and from experiments he clearly proved that, in an old pasture, a layer of cinders and lime had been covered within a few years, to the depth of an inch, by the castings of worms. "On carefully examining," he also wrote, "between the blades of grass in the fields above described, I found scarcely a space of two inches square without a little heap of cylindrical castings of worms." Now, a week or two ago we chanced to walk through an old pasture, and we were much struck by the number of the worm-casts it showed. They were, we are certain, nearly, if not as numerous as those mentioned by Mr. Darwin, and they darkened the field so much, though the grass was growing, that the caused some parts of it to look as if newly top-dressed. And when the fine soil thus raised gets spread by the feet of sheep or cattle, we doubt not but a stimulating top-dressing it will make. We have since examined several old pastures, and the castings were numerous in each; but we noticed that they were fewest on the pastures where lime had been most used. This we set down to the hurtful effect that lime will be likely to have upon the wormlings.

The earthworm is in more cases injurious to the gardener than the farmer. The giant lob-worm occasionally carries the main leaf of a young plant bodily into its hole; and in gardens, the bareness of the soil enables the observer to notice that it is a common thing for worms to drag straws, grass blades, plants, leaves, &c., into their holes; but for what purpose these are carried down nothing definite is known. The things taken down, however, pass into manure.—The worm in the garden has its uses if it has its faults; and when it partakes of "green meat," which it never does extensively, the food selected is generally some vegetable or root rendered soft by decay.

They do not penetrate the soil to any great depth, because they require air. In stiff soils they are not generally found much beyond a foot from the surface, but on lighter soils, through which they bore with more ease, they may be found deeper. At all events, they go deep enough to permeate the soil, and air and drain it, at a depth to which the plough cannot reach, and for which, we fear, they get but little credit. Indeed, their usefulness is seldom thought of, whereas by many they are still ignorantly looked upon and loathed as the

"Wriggling tenants of the grave."

—*Scottish Farmer.*

Liebig estimates the amount of nitrogen abstracted per acre by the hay crop at 56lbs, equal to 104lbs of ammonia.

The hay of red clover, cut in full flower, 25th June, contained of water 16.60, of ash 5.90, of woody fibre 31.37, of nutritive substances 46.07 per cent.

## Agricultural Intelligence.

### Spring and Summer Horticultural and other Shows.

Niagara Electoral Division Society, at Niagara, June 27th.

Kingston Electoral Division Society, Horticultural Show, at Kingston, July 2nd.

### Provincial and State Shows, 1862.

Upper Canada, at Toronto, September 22nd—26th.

Lower Canada, at Sherbrooke, 17th, 18th 19th September.

New York State, at Rochester, September 30 to October 3rd.

Illinois State, at Peoria, September 29 to October 4.

**FLAX SCUTCHING.**—The Flax Scutching machine lately imported by the Government and presented to the Board of Agriculture of Upper Canada, and of which an account has already appeared in this journal, was submitted to a trial, experimentally, in Toronto a few days ago. A number of gentlemen interested in the production of Flax were present, and were satisfied that the machine will prove a most efficient implement, and will be the means of saving a large portion of the expense heretofore incurred in the preparation of the fibre for market. Parties who have flax on hand which they wish to have scutched may obtain the use of the machine by application to the Board of Agriculture, and paying the necessary expenses. At present it has been sent to Newcastle, West Durham, to dress a quantity of flax on hand there.

### Cultivation of Flax in Canada.

#### *Meeting of the Belfast Linen Trade.*

Yesterday a meeting of the linen trade was held in the council-room of the Chamber of Commerce, to hear a statement from Mr. Donaldson, Agent of the Canadian Government, regarding the capabilities of Canada for the production of flax, and the facilities which exist there for its successful cultivation. Wm. McMaster, Esq., was called to the chair. The other members present were, Messrs. John Hind, John Cuddy, E. H. Thompson, W. Mitchell, J. Wallace, W. H. Patterson, Wm. Crossley, Henry Dickson, Charles W. Shaw, W. McIlwrath.

**CHAIRMAN.**—I have merely to say that, in consequence of what Mr. Donaldson, the Emigration Agent of Canada, said to myself and other members of the linen trade upon the cultivation of flax in Canada, we thought it advisable to hold a meeting and hear what he had further to say on the subject. We held a



meeting last week, which was attended by a very limited number of the trade, and what he brought before us we considered of such importance to the trade that we thought it right to call another meeting, and let the members decide whether any steps should be taken. The secretary will read the minutes of the last meeting, and then Mr. Donaldson will make his statement for your information.

Mr. McIlwraith (secretary) read the minutes of the last meeting, and the advertisement convening the present meeting.

Communications from Mr. Jonathan Richardson, M. P., and Mr. James Herdman, Strabane, were read, in which these gentlemen stated their inability to attend the meeting.

Mr. Donaldson (who produced and laid on the table several samples of flax, both in the straw and in the scutched state—the produce of Canada) said he had little to add to what he had said before. When in Belfast, last year, he found there was a great demand for the raw material, and that exertions were being made to secure the cultivation of flax in India and other places; and the question naturally arose, could flax not be grown in Canada? On his return to Canada he brought the matter before the Canadian Government, who were well pleased that he had given his attention to the matter here. He visited the various agricultural meetings in Canada; and having gone through various parts of the country, he thought the best thing he could do would be to bring samples of the flax both in the straw and in the scutched state to Belfast. They were now before the meeting, for the inspection of those present. Although the samples were very good, they were not near so good, he thought, as might be produced.

Mr. Patterson.—You have had some of Rowan's machines sent out.

Mr. Donaldson said that immediately when he went back to Canada he had advised the Government to send for a number of Rowan's flax scutching machines, and on his statement of their efficiency, which had been proved in this country, a number were ordered by the Canadian Government. He did not hesitate to say that the soil of Canada was well qualified for the cultivation of flax. It was something like the soil of this country, and the rotation of crops followed generally similar to what they did here. Last year about 2,000 acres of flax had been grown in Canada. His principal objects were—first, to show the merchants of Belfast that in Canada flax could be grown suitable to their market, and, next, to advise the flax merchants of this country to send out some party to give instructions in the production of flax, such as would be suitable. The people of Canada were now considerable consumers of the manufactured article, and the more flax was cultivated there the greater would be its export to this coun-

try and the greater the import of the manufactured article, so that it would be advantageous to both.

The Chairman said, judging from the sample he saw, there was little doubt that flax could be grown, but at what price could it be set down here? Where did the 2,000 acres go which were grown last year?

Mr. Donaldson.—It all went to the United States, except a small parcel that came here to Mr. Preston.

The Chairman.—What was got for the produce generally?

Mr. Donaldson.—I think about £40 a ton. One company that has scutch mills, bought 1,500 acres out of the 2,000; but I am sorry to see that by fire \$40,000 worth of flax and buildings have been destroyed. I am quite satisfied, we can raise an acre of flax or anything else as easily as you can here. The labourers there are better paid for their labour. A man who gets 4s. or 3s. 6d. a day for his labour will, of course, do more work than a man who only gets 1s. 6d. It takes £7 10s. to £10 to raise an acre here, and I am quite satisfied that it can be raised in Canada for £4, considering the cheapness of the land.—One of my objects is to get the manufacturers of Belfast and the province to send a party to Canada to give instructions respecting the proper mode of growing it; and I think, if this be done, the farmers there will adopt the growth of flax more readily. The Government make an offer of paying the passage to Canada and the travelling expenses of the gentleman so sent. A son of Mr. McCrea, of Strabane, with whom the trade are familiar, offers to go for £200 a year, and this expense would be very trifling to the merchants of this province.

Mr. Hind.—For what purpose was the flax used in the States?

Mr. Donaldson.—For canvas and cordage. Mr. Preston, I believe, got £50 a ton for some of what was sent here.

Mr. Hind.—Is there any prejudice in Canada against the growth of flax?

Mr. Donaldson.—None, except it is hard to pull.

Mr. Hind.—It takes eight women to pull an acre here.

Mr. Donaldson.—Four men will pull an acre there, and it is cut as close as meadow—close to the ground.

Mr. Patterson.—A country that could produce this flax could grow flax fit for any purpose.

Mr. Donaldson.—I have no hesitation in saying that, when you are going to such expense in the cultivation of flax, if you give any attention to Canada, you will get a plentiful supply there in a short time. By encouragement you will get as much in two years as you will from other places, I believe, in five

or six. As we increase growing you will increase selling to us.

Mr. Patterson said that a great deal of what Mr. Donaldson had said was much in accordance with his own opinion. He saw an article from Mr. Donaldson in the Toronto Daily Leader, and it was evident that the public of Canada were alive to the matter. He (Mr. Patterson) had written a letter to that paper, and in it said that, if they would grow the flax, the people of Belfast would buy it.

Mr. Hind said there was no doubt that how to obtain a better supply of flax was the most important question connected with the linen trade. Mr. Donaldson's proposition was a very feasible one; but would it be right for them to teach the people of Canada how to grow flax that might be bought up by a competing country?

Mr. Donaldson—Yes; but I am sure you will get the preference.

Chairman—Is there any duty in the States?

Mr. Donaldson—I think  $12\frac{1}{2}$  per cent.

Chairman—That would be quite protective enough.

Mr. Donaldson said at present farmers did not generally sow flax in the best land. He had had a conversation with Mr. McCrea about it, and he was quite satisfied that in Canada flax could be grown equal to anything grown in Ireland. He had not spoken his own opinion merely.

Mr. Hind said they were met to give assistance to this project or the reverse. There could be no doubt at all about the importance of this question to the flax spinners of Belfast, and the country generally, and anything that could give them an increased supply of the raw material would certainly be a great boon to the trade. But it should be remembered that the United States was very near Canada, and that, especially in the States bordering upon Canada, there had lately been considerable progress made in both cotton and woollen manufactures; and, of course, if they saw their way, they would be naturally anxious to advance in the manufacture of linen also. If the people of Belfast subscribed their money for the cultivation of flax in Canada, they might be merely giving encouragement to the manufacture of linen in the United States. He (Mr. Hind) would be glad to see a good supply of flax coming from Canada, or any other place that could supply it, but he had no desire that they should put a whip into the hands of those who should whip them. Let there be a guarantee that some direct benefit would be gained by it. How could they tell whether or not one ton of the flax would ever come here? How could they tell whether or not the Americans would give a higher price? He (Mr. Hind) was afraid the project was not looked on very successfully by the manufacturers of this part of the country, else they would have had a larger meeting to consider the question.

He did not want to take a narrow view of the question; but the linen business had not the elastic nature of the cotton business, and they should be naturally jealous of not letting the trade escape from themselves. If a guarantee were given that a portion of the flax would be sent here to be sold at market prices, the question would be different. There was no doubt the flax could be grown. The question was, should they take any steps in the encouragement of the growth of it?

The Chairman said it could not be expected that a guarantee would be given.

Mr. Donaldson—Of course if the Americans give £50 a ton for it, and no more could be obtained here, I could not secure the flax to you; but I don't think you need fear getting a very large portion of it.

Mr. Hind—We have got none of it yet.

Mr. Donaldson—There were only 2,000 acres grown last year, and very little of it would suit your market. But we can grow what will suit your market, which I don't think the Americans will purchase.

Mr. Hind—But the facility of getting it might easily raise a market in America for it. We have made two or three attempts to force the cultivation of flax, and the very places where we did so we got least from; and it occurs to me that, if the farmers of Canada find it to be for their interest to cultivate it, they will do so irrespective of any assistance from this province. If they did not find it to their interest to cultivate it, they could not be made grow it. If they get a better price here they will send it here. If not, they will not send it. If they can make money by growing wheat they will grow wheat, and if they can make more money by growing flax they will grow flax; and if the Government of Canada are anxious for the growth of flax, £200 a year is not a large matter to stand in the way. I think all we can do is to say:—"Here is a market for you. We will give you all encouragement that a buyer can give a seller if you only bring it to us." But it is not our duty both to pay for the cultivation of the material and then to purchase it.

The Chairman thought they should first see how much of this season's growth would come here. He thought the cultivation was more a Government and farmer's question than theirs. Instead of being beneficial to them it might be injurious.

Mr. Donaldson—Seeing the anxiety on the part of the manufacturers and flax spinners here to get the raw material, and, seeing that you had subscribed towards its cultivation in India, I was convinced that you were anxious to have a large amount of it. If I had not supposed that the proposition would have been met quite heartily, I would have endeavoured to get our Government at home to do something in the matter at once. But seeing that it was easy to grow a large quantity of it here, almost at



your own doors compared with India, I thought the matter would have been taken up very readily. The Government have given very little attention to the matter as yet. The anxiety of parties here for large quantities of the raw material is the very reason I brought the matter so strongly before you.

A Member said that the India flax Company was no comparison. The flax raised by them would be brought there.

Mr. Hind—We are very anxious to get the raw material, for I think the trade was never in such want of it as at present. The flax has only to be sent here to be sold on the very best of terms. If sent here it will be purchased, and I think the matter need not be proceeded with farther.

Mr. Patterson did not concur in the apprehension that the Americans would cut out the trade of this country; but he agreed that the trade here should not go to any great expense in the matter. Let what would be grown this year be sent over, and it would be seen the kind of market it would bring.

Mr. Hind—2,000 tons could be sold before the end of the month if in Belfast at present.

Mr. Patterson—If flax of this sample were sent to this country it would pay freight, commission, and everything, and bring £60—or £65 per ton.

Chairman—Some of us have given £70 for no better.

Mr. Hind begged to move that the matter be adjourned *sine die*. He thought that their offering a ready market nineteen years for certainty out of twenty was great encouragement for the cultivation of the fibre. If the Canadians thought it profitable to cultivate it by finding a good market for it, at the highest prices of the day, according to quality, they would do so. He (Mr. Hind) thought that that was all the encouragement they could give, and begged to move that the matter be adjourned *sine die*.

Mr. Mitchell seconded the motion, which was put from the chair and carried unanimously, and

The meeting separated.—*Belfast Whig*, of May 6.

### The Fat Stock International Show at Poissy.

(Abridged from the *Mark Lane Express*.)

In England we know a great deal about France military, France Naval, France political, but very little about France agricultural. We are well acquainted with the *savans* of literature and science, but very little with the labours of

those whose enlightened researches into the principles which should govern the practice of the cultivator and breeder have produced wonderful results since 1815. We are very familiar with the ubiquitous red shirt of the barricade, but we know far less of the blue blouse of the peasant. The political revolutions which have shaken the land to its centre, are present to our minds in all their frightful and heroic details; but we scarcely know anything of the silent but potent agencies which are at work throughout the fertile plains and mountain regions of this splendid country, producing abundance where once was barrenness, knitting together village to village, town to town, district to district, department to department; connecting the whole, in fact, by iron or macademized ways, with the great ganglionic centres of nervous force—the cities of France. We know but little of the markets which are thus being opened in localities where the population had no inducement to furnish more than their own wants, or, in fact, of the great stimulus imparted by the increasing strenuousness of demand to the energies of supply. The improvements effected since 1815 are scarcely to be credited; and the fact is the more interesting, because what occurred with us eighty years ago is here going on before our eyes. The foreign trade of France has quintupled, her manufactures have quadrupled, her agriculture has doubled its produce, under the influence of those three great principles of peace, justice and freedom, which are the eternal counterpoise to the hateful effects of war, violence and despotism. Eighty thousand miles of road have been opened, ten thousand miles of railway have been completed, canals have been cut, and rivers rendered navigable. Since 1789, 5,000,000 acres have been added to the productive area of the country; vineyards, and orchards, and meadows have increased, while woods have diminished. In tillage, we possess M. Lavergne's authority for stating that the cultivation of fallows has decreased by one-half; that the growth of wheat, barley, and oats has increased a third; that the water meadows have tripled in extent; and that the cultivation of roots, which was hardly known in 1789, now covers 5,000,000 acres.

We have often heard it stated that we have nothing to learn from French farmers; but the English who are here, and who have the advantage of being able to compare the present Show at Poissy with the Show held upon the same ground in 1857, are generally of opinion that if this is the case, it is equally certain that our French brethren will not much longer require our tuition. The carpet-bag and railway-ticket are fine institutions for settling men's ideas.—Until we visit the fair, we fancy we are masters of the best horse in the country. Nothing will prove of more service to English breeders than this trip to France, notwithstanding that some

were the subjects of an amusing and not particularly pleasant episode on the frontier in coming. "These Royal Agricultural Society of England Show," said a celebrated English machinist, "will be the death of me: I no sooner invent one thing than I must at once begin to improve upon it before the next meeting, or else arrive there to find it superseded and antiquated: there is no rest." Even so: the English breeder will find as little rest as the implement manufacturer, if he is to keep his ground in France; and as this is a most important market for him, we are all the more pains to impress upon him the imperious necessity of straining every nerve to keep the lead he now undoubtedly holds.—The man who wants rest must withdraw from the struggle; to stop, with a crowd of eager competitors in the rear, is to be run over.

The arrangements at Poissy, as compared with those of the Royal Agricultural Society's meetings, merit a passing consideration. How much taste is displayed here! How much prosaic stolidity at home! Here the sun falls upon bright colours, of a pretty vandyked valance hanging from the eaves of the waterproof shedding, and flags, tastefully grouped, flaunt gaily in the breeze; a coat of paint is bestowed upon the wood-work; all, adding about five per cent upon the total outlay, gives a charming *tout ensemble*. Why not a little more decorative display at Battersea? The last arrivals took place on Sunday. On Monday nothing was done until noon. The animals were then brought from their comfortable stables, and placed according to the official programme. Two juries immediately commenced their labours, the avenues being guarded by soldiers, and no non-official was admitted, save members of the press. One jury judged the cattle classes, the other the sheep and pigs. Both consisted of twelve members and a president. The composition of the first were as follows: Five landed proprietors, two Government General Inspectors of Agriculture, an Inspector General of the Imperial Veterinary Schools, the Veterinary Professor at Alfort, a member of the central School of Agriculture, a Professor of Zoology, a Paris butcher, and last, though not least, our own Mr. Fisher Hobbs, who had no little difficulty in swaying the predilections of the last-named member of the corps. The second jury was similar, and both contained many men who were more disposed to rely on the old butcher's opinion than on their own.—So far as we observed, the presence of this professional worked well enough, and we see more reason than ever to urge the adoption of the same practice at our Christmas Show. There is but little dissatisfaction with the awards; it is only here and there, where the French taste for the round has overruled the English taste for the sirloin, that there is any fault-finding.

The following is a synopsis of the entries:—

## BRITISH.

|                                                 | Steers. | Oxen. | Heifers. | Cows. | Total. |
|-------------------------------------------------|---------|-------|----------|-------|--------|
| Shorthorns.....                                 | 1       | 1     | 6        | 5     | 13     |
| Devons.....                                     | 2       | 1     | 0        | 3     | 6      |
| Hereford.....                                   | 4       | 1     | 2        | 3     | 10     |
| Polled Angus,<br>(Aberdeen, Gal-<br>loway)..... | 5       | 3     | 3        | 3     | 14     |
| Highland.....                                   | 0       | 2     | 0        | 1     | 3      |
| Ayrshire, &c.....                               | 0       | 0     | 0        | 0     | 0      |
| Irish.....                                      | 1       | 0     | 0        | 1     | 2      |
| Other breeds.....                               | 0       | 1     | 0        | 0     | 1      |
| Cross-breeds.....                               | 3       | 3     | 2        | 0     | 8      |
| Cattle.....                                     | 16      | 12    | 13       | 16    | 57     |

There were no entries in the Leicester, Cheviot, Blackfaced, and Mountain Classes, Dutch, Belgian and German Classes. In the Long-wool Classes there were 4 entries; in the Southdown 3; other short-wools 3; Kents 1; Cross-breeds 2; total 13.

The entries in the Pig classes number 25.

Altogether there are 95 entries of British stock, from 41 exhibitors.

Mutton is now more an object in France than wool, or, at all events, than the short-wools which are supplied by the Australian colonies at such a rate as to discourage the French growers.—The merinos are crossed with the Dishley's, and the current is now turned in favor of long wools, as well as mutton, as may be seen in the award of the prize of honour to the Cotswold breed, 7 to 3 making a decision which a few years since would, notwithstanding the huge proportion of the Cotswolds, have favoured the Downs.

The pig in France thrives better than it does with us. A dry soil and warm climate are more conducive to its development; and our own pigs do much better in the Gallic than in the British sty. It is said, on good authority, that the best breeds of France are descended from ours, and that therefore Nature helps them to beat us with our own weapons. These facts will prepare the reader for the announcement that England does not hold the pre-eminence in the porcine breeds that she does in the ovine and bovine. Our neighbours seem certainly to have a better idea of tenderness in pork than of that quality in either beef or mutton. Our show of pigs is still creditable, and the credit is due to Mr. Waters whose 17-months Sussex, weighing 30 stone, bears off the medal of honour in the pig classes; and Mr. Crisp supports his own as well as the national credit in the 4, 8, and 18-months classes, receiving one 1st and two 2nd prizes.

In the following notice of the French stock it will be best to follow the course indicated in the programme. As a tabular statement may also prove convenient we append one:



|                                               | Steers from<br>3 to 4 years. | Oxen. | Total |
|-----------------------------------------------|------------------------------|-------|-------|
| Norman.....                                   | 2                            | 8     | 10    |
| Charolaise and Niver-<br>naise.....           | 5                            | 12    | 17    |
| Partheraise, Choletaise,<br>and Nantaise..... | --                           | 7     | 7     |
| Salers.....                                   | --                           | 7     | 7     |
| Limousine.....                                | 3                            | 13    | 16    |
| Garonnaise and Baza-<br>daise.....            | 8                            | 18    | 26    |
| Other Breeds :                                |                              |       |       |
| Large.....                                    | 6                            | 15    | 21    |
| Small.....                                    | 5                            | 20    | 25    |
| Shorthorns.....                               | 7                            | 6     | 13    |
| Other Foreign Breeds..                        | 2                            | --    | 2     |
| Crossbreds.....                               | 44                           | 31    | 75    |
| Cows :                                        |                              |       |       |
| French Breeds.....                            | --                           | --    | 13    |
| Foreign Breeds and<br>Crosses.....            | --                           | --    | 27    |
| Lots of four or more                          |                              |       |       |
| Bullocks.....                                 | --                           | --    | 16    |
| Females.....                                  | --                           | --    | 8     |
| Extra.....                                    | --                           | --    | 4     |
| Calves.....                                   | --                           | --    | 18    |
| Cattle.....                                   |                              |       | 305   |

Of sheep there were upwards of 300 in pens of ten, the entries for merinos and mixed merinos being 8, large long-wools 8, small and ordinary wool 19, extra 3.—Total 33.

Of pigs the entries of French breeds are 32, foreign breeds and crosses 47, crossed French and foreign 14, lots of four or more 7.—Total 100.

Altogether there are 438 entries from 234 French exhibitors.

We purpose to commence this review by stating a few facts relative to the history of the pure Durham breed in France, and the position it is likely to hold, and then to go on to give a brief notice of the specimens of the native breeds here exhibited, and the results which have followed from crossing them with the Ameliorator Durham, and with each other.

It is now about twenty years ago since the Durham was first imported into France. The national establishments, where the breed was first cultivated, no longer now monopolise the credit, for private enterprise is at work to extend it. The course of the Durham has not been quite uncontested with us ; and on the plains of the North-west, where it has made most way, it has had to meet and overthrow several stout antagonists before occupying their places. All this was a work of years ; but our neighbours have been judicious. Liberal bidding at our great sales has placed France in possession of some of the most celebrated names of the English Herd Book, and constitute a stock now registered in a herd book, which, published every four years, has reached its third volume. From the last volume it will be found there are about

143 breeders, and some 1,600 pedigree animals. As to the genuine character of these entries, it is sufficient to state that the French are even more particular in the matter of descent than ourselves—that no animal is received unless an unblemished shield can be shown on both sides ; and the Emperor has lately required that no shorthorn shall be imported into the Imperial herds without the descent can be traced on both sides to the second volume of the English Herd Book. Animated by this elective spirit, the Jury passed at once three steers entered as pure Durhams, into the cross class, because they could not exhibit this double certificate of unexceptionable parentage. Whether the shorthorn is as likely to become as useful as a pure breed, as he is an ameliorative breed, it would, perhaps, be difficult to say ; but, judging from the show here there seems clear reason to think that he will be the most useful in the process of moulding the native races. There are certain qualities in the climate and soil of Yorkshire which bring out the higher developments of the Shorthorn in a manner they are eduved nowhere else ; and comparing the pure Durham of France with the minor specimens which represent the English Shorthorn here, there seems to be a tendency in the former to fall short of the full growth we look for. The fresh importation of English blood will, in fact, be constantly necessary, to preserve the acclimatized breed from degeneration. The Shorthorn is now overcoming local prejudice in the north-west, where bullocks are not worked. The small farmer has come to understand why breadth of chest is accompanied with disposition to fatten. The small bone and enormous development of those parts of the body which yield that meat which is most esteemed, are qualities which are sure to give our pet a popular sway. The breed is found now pretty generally throughout the departments of Mayenne and Maine-et-Loire, where most progress in cultivation has been made ; but is most esteemed because it affords a short cut to a result which otherwise could only be obtained by careful selection, followed up with great judgment for a long series of years.

The prize of honour for the bovine classes rests with the pure Durhams. Nor is this all which distinguishes the high position of the breed.—There are six large money prizes offered on the French side, to the best animals under three years of age, irrespective of breed or weight ; and, save one, these all lodge with the Durham pure, or with first crosses of the Durham with the native breeds ; the Durham-Manceau, the Durham-Breton, the Durham-Normand, and Durham-Garonnaise taking the lead in this race for early maturity. The Durham blood in the cross-classes, which are large, also secures all the ordinary, and, save one, all the supplementary prizes, such as those offered by the town of Poissy. In fact, the strength and interest of

the French cattle lie in this presence of our Shorthorn mettle.

Of our other English breeds, there was only one pure French specimen, and that an exceedingly good Hereford. Now for a word or two concerning the native breeds, which are divided into large and small, workers and non-workers, those raised for their milking, and those for their beef-producing properties. It will only be necessary now to dwell on those which are not due to slight local circumstances, but to those which appear to have a permanent character and a pliable frame.

The Normand or Cotentin extends over five or six departments of the north-west. Two circumstances have contributed to its development—the superiority of the Paris market, and its exemption from work. The small breed yields Isigny and Gournay butter, and the other the meat for the French metropolitans.—This breed produces about one-fourth the meat consumed in Paris, and about as much more consumed locally; or, annually, about 100,000 fat beasts. The bovine population of these departments should be taken at one million head, including 500,000 cows, = 1 head to 7½ acres. The departments round Paris have no special breed, the Cotentin has spread there. It is a red or brindle, bony race, but is capable of improvement with the short-horn. One of the gaunt specimens here stands 5 feet 7 inches; in length, to horns, measures 8 feet 6 inches, and in girth, 9 feet 1 inch; weighs 216 stones, age 7 years 2 months; his ribs being barely covered with coarse flesh, such as one so often gets at the Paris restaurants. Crossed once with the Durham, the size above is reduced, and we get a result like the following: five feet in height, 7 feet in length to horns, 8 feet 6 inches girth, weight 150 stones, age 48 months. Where the Normand has been crossed frequently with the Durham, as is the case of two or three of the cows shown, these results are animals fit for one of our Christmas shows.

The most hopeful native breeds, however, are the Charolaise and Limousin. The Charolaise is a large, expansive, mouldable white bullock, with jutting shoulders, a dropping back, great massive rumps, ungainly set of tail, heavy bone, narrow chest, and mild expressive face. These occupy, with the Lorraine and Comtoise races, the twenty departments, which form the north-eastern angle of France, and contain 2½ million head. When all the country beyond a radius of 50 miles of Paris was considered a *terra incognita*, the Charolaise was mainly used for work; but now that the limits of this radius extend, it is being known more for the value of its flesh than for its patience under the yoke. It has, perhaps, owed its immediate development to its neighbourhood to Lyons; it has extended through Nièvre and Berri, and now furnishes to the Paris Market nearly as much weight of meat

as the Normand. The measurements are as follows: height 4 feet 10 inches; length to horns 6 feet 8 inches; girth 8 feet five inches; age 45 months; weight 900 kilos. The cross with the short-horn reduces the exaggerated defects, gives width to the chest, contracts the shoulder points, sets the tail right, and corrects the drooping rump. Great things are to be done by means of this mixture of blood, and also by infinite pains in the selection of parents without it.

The Limousin comes from the volcanic centre departments. It is one of the working classes; but when taken from the yoke and treated liberally, it becomes a most valuable meat producer. There is much resemblance in form to the Charolaise; but it is rather large, and of a rich cream colour. The elbows are out in some cases about 8 inches, and give the animal a deformed look. Paris consumes annually about 20,000 Limousin beasts, of which two-thirds come directly from the provinces, and the rest after having passed through the hands of the grazier of La Vendée and Normandy. This is the main meat production of the breed; for in the country whence it comes, the folks are too poor to eat meat. Though very good results are obtained by admixture of the Shorthorn blood, it is thought that without any change of this sort nothing would be easier than to triple the production of meat by a better system of culture, by irrigation of meadows, and drainage. The Limousin is much larger than the Charolaise—in height 5 feet, in length to horns 7 feet 11 inches, girth 8 feet, age 38 months, weight 154 stones. The Shorthorn performs the same ameliorative work as in the other case: the back straightens, the cavity of heart expands, and the skin mellows. The Durham-Limousin is in many cases a better animal than the pure aristocrat. Next in order come the Garonnaise, Bazadaise, and the Salers, which generally reminds one of the saying of an acute French farmer: "We excel in producing bullocks for the racecourse, and horses for the butcher." Some of the great red Salers are inches higher behind than they are in front (6 ft. to 5 ft. 9 in.), and their spines hang like a suspension bridge between the two piers, in a great sinclinal curve: these have as yet, their temporary uses. The Manceau is a more useful, thickset breed, and produces a valuable cross with the Durham. We have yet to mention the Chollet, the Mancelle, the Aubrac, the Parthenay, Flanders, and Nivernese, but must leave them for some future occasion. The microscopic Breton, also, covering so much space in the west, now that the Ayr and Durham cross is established, is likely to become very important, because of its quick feeding properties, and its singular ability to make the best of a poor pasture. The native race and its crosses are well represented.



And now we will venture a word or two about the French sheep. France possesses a fair contingent; but still is much indebted to us for the introduction of the Southdown and Dishley blood, which certainly has worked wonders for the flock-masters. The prize of honour lodges with a pen of pure-bred Southdowns, which display great beauty and maturity. The climate, however, induces too much delicacy of constitution, if this can be in any way indicated by the ears. The wool is much shorter also than those of Lord Walsingham's 10 months Downs with which we compared them. The average length and girth of English Downs is 2 feet 6 inches and 3 feet  $7\frac{1}{2}$  inches, the age 10 months, and the weight 327 kilograms. The French 12 months sheep weighed 342 kilos., measured in length 2 ft.  $2\frac{1}{2}$  in., and girthed 3 ft. 5 in.; the wool on the former being 2 in. long. It seems as though the same reasons we adduced for esteeming the Shorthorns as more valuable in France to mould other native breeds, than to exist alone, might apply to the Down. The climate of France is certainly well adapted to them; but they will require a pretty frequent importation of our blood to keep them vigorous. The result of crosses here shown with the Berri sheep are exceedingly good. The first of the show on this side is presented by the Dishley Merinos. The Merino was introduced into France by Louis XVI., for the increase of wool. The result has been enormous; but now that the Australian Colonies are cutting the French out of the market for short wool, and mutton is becoming more valuable, a cross of the greatest value has been obtained. A lustre wool has been reached, and a vast increase of mutton. We have here the improved Rambouillet Merino and the Dishley Merino. No contrast can better show how these creatures are as clay in the hands of the potter. The Cotswolds with Berri sheep give a very fine quality sheep. There is no necessity to mention the rabbit-eared Larzac or the calf-headed Vendeans; but of the silky-woolled Mauchamp breed, the result of a mischance ably handled, and of the Charnoise, the result of a chance cross between a Berri sheep and English ram, it must be said that they produce the highest qualities, and are worthy of careful development.

Of the pigs we have already said that of the French and British classes, we come to the general conclusion that, although our neighbours have advanced at so surprising a rate since the last Poissy Show, they have done so by handling the means we have given them in the most skilful manner, and that, if they could continue to progress, they will still be continually obliged to resort to us for new blood. There are some physiological considerations in connexion with this conclusion which cannot now be touched upon. While we are careful to keep the lead, there seems to be a strong and steady demand

upon us for pedigree stock of all descriptions' and the more they improve the more will this demand increase.

### The Royal Dublin Society's Spring Cattle Show.

The *Irish Farmer's Gazette* of April 26th contains an elaborate report of the Spring exhibition of this influential and long established Society, which has done so much not only for the Agricultural but the Mechanical and Artistic interests of Ireland. The live stock in point of numbers and quality were quite equal to former occasions, which is a significant and encouraging fact after the past two very unfavorable seasons. In consequence of manufactories being so much engaged in preparing for the International Show in London there was some falling off in the implement department. The tone of the report of this meeting is hopeful, notwithstanding the depression which Ireland experiences in common with other parts of the United Kingdom, from the late unfavourable seasons and the American difficulties.—We make room for the following observations, which will be perused with interest by many of our readers:—

Mr. G. W. Maunsell said it became his duty to call upon his colleague, Dr. Steele, the assistant-secretary to the society, to read the prizes that day bestowed upon the successful competitors. Taking the present show as a reflex of the enterprise, industry, and prosperity of the country, they had no reason to fear that its future agricultural prospects would not be everything that its friends could wish. Extraordinary advantages had accrued to all sections of agriculture by the way in which the society's shows had been fostered and carried out for many years. As the interest of Ireland in them had increased, the energies of the Royal Dublin Society had been taxed to no small extent to provide accommodation. For many years they had lived, it might be said, in temporary sheds; but they were now enabled to hold their shows in a noble hall, which during the last twelve months had been the scene of an exhibition which did credit to the national industry and taste, and which had been visited by the heir apparent to these realms, and also for the last time by the illustrious Prince who presided over the society. That exhibition had scarcely closed when the increasing wants of the society drove them to extend their premises in a new direction; and they had hardly by the removal of some houses and masonry been enabled on this occasion to give the

exhibitors a foretaste of what they might hereafter expect, when the means of the society, strengthened, as he trusted they would be, by private enterprise and by public aid, should be enabled to carry out the design so ably set on foot by Sir Richard Griffith, by opening what might be called Griffith's Court, which would double the extent of accommodation at the command of the society—and not before it was needed—to the great advantage of the agricultural enterprise of Ireland. Turning from the cattle to the exhibition of implements in the lawn, it was cheering to see the enterprise there displayed, and to think how rapid had been the progress in that department. Every year had brought forth new items of farming implements, which did credit to those who sent them there without price. It was not many years ago since this branch of farming industry was, he might say, wholly unknown. Year after year the enterprise of those engaged in the manufacture of farming machinery had been devoted to continued efforts to produce articles at once the most solid in their nature and the most simple in their detail; and those who looked at the lawn that day would see how ably those conditions had been fulfilled. Without attributing perfection to them, those implements reflected the highest credit on the skill and industry of those engaged in that department (hear, hear). Of late years the value of artificial manures had through the light of science and chemistry been more fully appreciated than before. On the table was a beautiful cup, the gift of a gentleman who was one of the earliest promoters of farming manures—Mr. Lawes. To him and to Professor Hounslow they owed the introduction of super-phosphates in agricultural manures, the results of the use of which might be counted, he believed, by hundreds of thousands. The stock exhibited at the shows of the society did not come solely from metropolitan districts, but was furnished by all the districts of the country. The midland and the southern counties contributed as well as the rest; the Kerry cow was giving way to the short-horn; and two of the highest prizes had been carried away by a Kerry gentleman for stock of the short-horned breed, which half a century ago was probably unknown there. Mr. Bland was one of the successful competitors from the Queen's County; there were Mr. Richardson and Mr. Young from the north; and from the south he might also mention the Marquis of Waterford. One name he would not pass over in silence, for when they considered that the judges, Englishmen, and unconnected with Ireland, had awarded the blue ribbon of the society to the honoured name of George Roe, they had a right to feel proud of the city of Dublin. Donnybrook—(laughter)—had covered itself with glory. Donnybrook had taken the palm from Meath and Westmeath, and while honoured names from these counties

were to be found in particular classes, no less than two of the beautiful cups which were now displayed before them had been borne away by the Donnybrook farmers. Long life and honour to a gentleman who, having worthily illustrated a career of commerce in that city, stood forward now as one of the most honoured and worthy competitors in the race of agricultural industry.

His Excellency the Lord Lieutenant said—My lords and gentlemen, if I may assume that the consent to this motion which the noble earl anticipated will be given, I now beg to return my sincere thanks to this numerous and distinguished meeting for the honour they have just been pleased to pay me (hear, hear). And I can assure you it is with more than usual satisfaction that I find that I need not depart on this occasion from that uniform strain of compliment, and congratulation which it has hitherto been my happy privilege to address to the members of the Royal Dublin Society at the period of their annual Easter meetings. For I will own to you that I was not without some degree of misgiving on this subject. I knew that the recent cycles of seasons through which we have passed have been of the most trying and unpropitious character. In the year 1859 there was a feature which has certainly since been very amply—too amply atoned for—there was a prolonged absence of rain which materially injured our pasture. In the years 1860 and '61, I need hardly remind you, there was a great excess of rain, which did infinite damage to the country—which covered our plains with inundations not yet wholly subsided—and which added a severe scarcity of fuel to the diminished production of food. Of course, these results could not take place without occasioning much partial distress. I naturally should not think of entering now upon any controversy as to the extent and amount of that distress. Most trying it is, indeed, to those who are entrusted with any discretion or responsibility at such periods to refrain from having to resort to the most obvious and immediate methods of relief; and I believe there have been—and till very lately have been—conditions of Irish society in which there might have been an overpowering necessity for applying the most artificial and blundering methods of relief. The land was to a great extent divided between a proprietary and a pauper peasantry. But now, except in very rare instances, it is in the district in which it is effected by the persons who are themselves interested—it is by spontaneous and independent effort that the struggle is made, and for the most part made successfully (applause). Of course, we must still reckon upon encountering the occasional rigour of the seasons, just as in the sister countries probably still wider ravages are being now inflicted by the shocks of foreign conflicts and the stoppage of raw materials. But I trust it will prove to be with the passions and wrath of man as we



know it will be with the strife and turbulence of the elements—since Nature is always found to restore her own excesses, and in different periods to maintain her own averages (applause). However, I entirely agree with the general bearing of the remarks which have been made by the Earl of Clancarty—that, whether we look to the geographical position of Ireland, or to the character of her soil, there will be always such a prevalence of moisture and humidity as will make pasturage, and the production of animals, the most secure and remunerating form which our national industry can assume. I do not, of course, mean, as I am sure he did not mean, or no friend of Ireland could mean, to disparage tillage, or the proper production of corn crops in those districts which are by nature suited for them (applause). Those districts abound in Ireland, and more especially is this the case with regard to oats. But still, coupling the physical condition of the country with the close proximity of those large English and Scotch markets where there is such a vast consumption of meat, I believe that providence has mainly appointed Ireland to be the mother of flocks and herds, and I, consequently, believe that she will fare all the better the more truly she keeps to her natural vocation (applause). And in this useful and patriotic path no more salutary or efficient encouragement can be afforded her than is supplied by those annual exhibitions, coupled with those of the Royal Agricultural Society—these annual spring exhibitions which take place under the auspices of the Royal Dublin Society. These exhibitions, within the comparatively short limits of my own experience, have evinced a most remarkable progress. It is within these limits that you have housed your cattle, and we hear that in another year you are likely to roof your implements. I need not point out to you what an interesting and suggestive exhibition the implements collected in your yards to-day furnish to you, or ever how wide an extent of usefulness they range (hear, hear). The facility of transport, to which we are indebted to our railway friends, has done an infinite deal in promoting every kind of agricultural competition; and we read now, too, of international exhibitions. The Emperor of the French has, with great sagacity, instituted them in his capital; and I am sure we shall be glad to find that one of our most well-known exhibitors, who has obtained a prize in the competition of to-day, not content with the laurels he gathers in your show—I refer to Mr. Ball—has carried away the prize for heifers in the capital of France (hear, hear). I need not say how entirely I agree with the reference which Mr. Napier so aptly made even to the superior care and anxiety which we owe to the permanent welfare of those labourers who, in fact, really furnish the national wealth, which it should be the object of this exhibition to promote (applause). We know that in the last twenty years, notwithstanding any of the draw-

backs and vicissitudes to which I have referred, and of which we lately had experience, yet the stock of Ireland has increased in value within that period from twenty-one millions to thirty-three millions (hear, hear). And with respect to quality, I think it is very probable that almost the worst animal in the yards to-day was as good a one as the prize animal of the same period back. I trust earnestly, my lords and gentlemen, that the varied accidents of these exhibitions, the numbers by which they are attended, the patronage by which they are honored, the skill by which they are fostered, may all progressively advance. It is true that we cannot warm our skies with unclouded sunshine, we cannot mature our crops, we cannot guard our sheep and cattle from all kinds of diseases; but we may continually furnish fresh aids to man in the struggle which he must always have to keep up with nature, giving the largest command over her bounties and making difficulties themselves the spurs to his industry and the elements of his success (loud applause).

### Horticultural.

#### Spring Exhibition of the Toronto Horticultural Society.

We can only afford space for a very general view of the first seasonal show of the Toronto Horticultural Society, which took place in the Music Hall, May 29th. The number of visitors, particularly in the evening, was large, and the display of flowers, fruits, and vegetables, considering the unfavorableness of the season, was extensive, and, upon the whole, of excellent quality. The arrangement of the articles betokened both taste and skill, a department that was undertaken, we understand, by Messrs. Gray and Humphreys, and the efficient pains taking Secretary, Mr. J. C. Small.

Some of the Fuchsias were large, of good form and rich in flower. The collection of Geraniums was extensive, not large specimens, but the inflorescence was varied and beautiful. In foliage plants the show was characterised by a number of luxuriant specimens, some of them new and of very rare excellence. There were also several good specimens of orchids and stove plants, which attracted much attention. These and other rare productions were from the conservatories of Mr. Justice Morrison, Judge Harrison and C. S. Gzowski, Esq. The Petunias were generally good, particularly the finely co-

loured double varieties belonging to Mr. Boulton. Verbenas possessed nothing remarkable, and the Calceolarias, perhaps not above the average of former years. Mr. James Fleming had some very beautiful specimens of pinks and tulips,—and his artistically combined bouquets commanded universal admiration. In consequence of the backwardness of the season, the roses were but few and mostly indifferent,—Mr. John Gray's usual rich collection being absent, was a marked falling off of the show. The vegetables were as numerous as could be expected, considering the drought and cold that has prevailed for several weeks, their quality generally denoted skilful culture.

There can be no doubt that the Toronto Horticultural Society has been largely instrumental in improving the taste and increasing the domestic comforts of a large number of people—the occupiers of the cottage and the stately mansion—and we trust that it and other similar organizations throughout the country, will continue to receive increasing support.

The following remarks were made by the Judges, Messrs. D. Murray, C. Meston, and W. Hill, of Hamilton, in their Report:—

"The judges, while they think that the entries are not so numerous as might be expected, are highly gratified with the exhibition, and discern unmistakable signs of progress. They would specially notice as worthy of recommendation:

"In the Floral Department, the whole of the stove and greenhouse plants, including many rare and well-known specimens.

"The two collections of orchids, Nos. 10 and 49, these they consider the great distinguishing feature of the exhibition, including, as they do, some of the rarest and most beautiful of this class, and forming without doubt the best collection ever exhibited in this Province.

"The fancy geraniums exhibit signs of careful cultivation.

The foliage plants would be worthy of a place in any exhibition. Some of the specimens are entirely new and most magnificent; amongst a very fine *Cyanophytum Magnificum* is particularly deserving a notice.

The six petunias (No. 88) could not be surpassed in Canada.

"In the fruit department, the collection of apples (No. 106), and the nectarine tree in full bearing (No. 94), are deserving of notice.

"And amongst the vegetables, the asparagus and sea kale are the most deserving."

### Hamilton Horticultural Society.

We had the pleasure of spending Her Majesty's birth-day at Hamilton, on the occasion of the first exhibition of the present year of the Horticultural Society. The day was fine, and all business in the city being suspended, everything assumed a holiday appearance. Having an hour or two to spare before the opening of the show, Dr. Craigie kindly conducted us through the gardens and conservatories of Messrs. McLaren, Kennedy and Brown; gentlemen occupying extensive and highly picturesque villas on the slope of the ridge, or, as it is here designated, the "mountain," and commanding beautiful and extensive views both of land and water. We had time for a mere glance only of these tastefully laid out grounds, most of which, as well as several others in this vicinity, were designed and executed by the late Mr. Mundie, of whose skill and good taste in landscape gardening many places in Canada afford a happy illustration. Whether we look for flowers and fruits under glass or in the open air, these establishments are alike creditable to the skill of the gardeners who conduct them, and the liberal spirit and taste of their enterprising owners. The expense of bringing this rough and stubborn soil into so high a state of beauty and productiveness must have been very great, and the artistic qualifications of those who planned and conducted the operations not less so.

The Show, particularly the floral department, was exceedingly good, but the vegetables raised in the open air were, in consequence of the backwardness of the season, few and inferior. The Geraniums were truly splendid, both as to size and varied beauties of color. The culture of these fine flowers does great credit to the skill and attention of their producers. We have never seen such magnificent fuchsias before on this side the Atlantic as those which characterised this exhibition. Several of them were from 10 to 12 feet high, well proportioned, foliage, like the geraniums, very luxuriant, and the inflorescence rich and varied. Calceolarias were rather numerous and, upon the whole, good; but it was said not quite equal to what the Hamilton growers usually produce. Of foliage plants there were several excellent specimens; and also ferns, both native and foreign. There



was quite a number of apples,—the Baldwin and Northern Spy in particular, looked as fresh and plump as when gathered from the tree.

We were much gratified to observe the improvement made in this enterprising city within the last few years. Its squares neatly and strongly fenced by iron railing, and ornamented by planting and fountains, indicate both taste and comfort; while the city commands an inexhaustible supply of the pure water of Lake Ontario, both for public and private purposes. In the evening we went over the well-managed nursery of Messrs. Bruce & Murray, who have a good general stock of trees—fruit and ornamental, and flowers. The day was spent in very agreeable and improving intercourse with the intelligent and energetic horticulturists of Hamilton; qualifications of which our readers must be well aware from the valuable articles which frequently appear in our pages from the members of the Horticultural Club.

### More about Dwarf Apple Trees.

FOR THE CANADIAN AGRICULTURIST.—It appears that my remarks made on Dwarf Apple Trees has awakened Mr. Arnold's indignation. It seems he lays the cause of my not succeeding in growing the dwarf apple trees to being deceived in not getting the right kind of trees. If this is the cause it is what we complain of, hence we cry *humbug*. But if it is my ignorance in not knowing how to manage them I had better take lessons to understand the business. However, I have kept up a continual warfare, in pruning, cutting back, pinching, and nipping, but all to no purpose. But I have not cramped their roots in a pot yet, as we do some plants to make them flower, which perhaps Mr. Arnold will say will be necessary. But in spite of all my cruel treatment they are now out of reach and no doubt they are glad of it. Now, sir, I thought from the description given that dwarf apple trees were so by nature and not by artificial means. If not, it is time their character was better understood. Now I do not say that there is not such a thing as a dwarf apple tree as described, but unfortunately for me I have not got them yet.

Are not all small stunted trees Dwarfs, and have not the nurserymen a peculiar faculty of making them so, for the purpose of fulfilling their desired object? But when they get good cultivation will they not grow as large as any other trees? I believe that most of the dwarf apple trees are of this character. Is this not *humbugging* the people? Yes, and I am not willing to see my brother farmers imposed upon,

as I have been, any longer. I expect to meet the disapprobation of the nurserymen; I have counted the cost and am now paying it.

Mr. Arnold next accuses me of losing confidence in my Rochester nurserymen. True, most true, hence we cry out "*humbug*." But I would have friend Arnold to know that I have not had all my trees from our neighbors, for amongst my first getting I sent to Toronto, to some of the Canadian nurserymen that Mr. Arnold boasts of for their honesty, for dwarf trees and some paradise stocks. Their stocks I grafted myself. Guess I know where I grafted them and can show it to be above the ground too. Now their trees are amongst some of my largest that I complain of. Well might the nurserymen smile, when they can sell hundreds of dwarf trees artificially made to the ignorant public, without the least hesitation of conscience. Now let me remark when I wrote my essay in '58 that some of the early bearing kinds had just began to bear. Thinking from this and the recommendation that they would all follow suit next year, I therefore spoke in very high terms of them, for I was completely in love with them. And I still would recommend every man to fill his garden with them, for they make beautiful low trees, such as I am so much in favour of. But don't expect that you will gather fruit from these trees when they are 2 or 3 years old, or the size of currant bushes, lest you be disappointed. Let us hear what friend Atkins says. If he wanted more dwarf apple trees he would as soon graft them on the common apple stock, believing from his experience that apples on the Paradise stock neither bears quicker nor makes smaller trees than on the common stocks. But if Mr. Aitkins and myself have been deceived in getting the right kind, as Mr. Arnold surmises there may be a possibility of, there we had better begin again. And I hope that Mr. Arnold will take pity on us, and send me 25 genuine trees (payable when they prove to answer his description). I do not know where else to find them, as I have tried many other places and this will be the best proof to his argument. I am sorry Mr. Arnold did not answer Mr. Beadle's requests, for it might have saved those severe strictures he complains of. But extreme cases require harsh medicine. Of friend Atkins' mild remarks there was no notice taken, I suppose because there was no *humbug* in them, for certainly his experience and mine are very much alike. Mr. Arnold invites me to visit his trees and there I will see trees three or four years old and 2 feet high in bearing. I would willingly accept of his invitation if possible, for I would not mind going a hundred miles to see a bush of the Northern Spy or St. Lawrence in full bearing at that size as a common thing. But again let us notice Mr. Arnold's concluding remarks. He says he will show me bushes ten years old that have now heads from 20 to 35 feet in circumference. Now I think it

is plain to be seen that his bush is just like mine; it is a very large one. Few trees will grow bigger in that time. Look a little further when that bush is twenty years old, and keeps on growing accordingly, it will measure 70 feet in circumference; quite a modest little bush, to have many of them in a garden to raise vegetables amongst. Why it might almost be called a mammoth tree, instead of a dwarf bush.

Now, Mr. Editor, I have much respect for these nurserymen, for they are doing much good in improving the county. I like to visit their nurseries, always feel myself at home with them. But, like myself, they work better for a little watching. Friend Arnold must try again and get his dwarf trees a little smaller, and extricate himself from his own trap that he has fallen into. Come and visit me and my fine trees, and Mr. Editor with your indulgence and patience we will fully investigate the character of the dwarf apple tree.

R. B. WERDEN.

Pictou, Prince Edward County,  
May 6th, 1852.

[The above subject is an interesting one, and we willingly admit communications upon it. We trust, however, that any discussion which may arise upon this, or any other topic, will be conducted in none other than the most friendly and courteous tone. We are sure our correspondent does not mean anything else, although some of his expressions may seem a little harsh. A word to the wise is sufficient.—Eds.]

### The Rose.

In a short time the first instalment of Perpetual roses will be due. Universal favorite as the rose is, it requires no recommendation. All the varieties are beautiful, but other things being equal, the Hybrid Perpetuals and the Bourbon, China and Tea Roses are to be selected on account of their more frequent periods of bloom. The Perpetuals are, however, by no means true to their name as regards their bloom, for they flower but twice in the season; profusely in June, moderately in September or October. There will be occasionally a plant which will afford a few flowers at other seasons, but the above is the rule.

Where there is a good cellar, green-house or frame, in which tender roses (under which head China, Bourbon and Tea Roses are placed) can be kept during winter, they are probably the most useful and satisfactory classes, as they are more constant in bloom and of a more delicious fragrance in general.

There is one very serious drawback to the cultivation of roses and that is the great depredations made upon them by the insects. The effects of these attacks are to be seen in the destruction of the tender shoots and buds, and the disfigurement of the foliage, which will have all the tender portions eaten out, leaving only the skeleton and a slight tissue of a dry nature, presenting the appearance of having been scorched. This is almost universally the case with the rose where no precaution has been used to prevent the ravages of the rose slug. The best preventive of its depredations is found in the use of whale oil soap suds, made with two pounds of the soap in fifteen gallons of water, and applied to the foliage with a watering pot, or preferably with a syringe, by the use of which the under side of the leaves may be drenched. The whale oil soap is not a common article of merchandise, but may be procured of the seedsmen in our large cities at a trifling cost.

Where this cannot be procured, a decoction of tobacco will be found a very good remedy. The frequency of the application depends upon circumstances; usually three or four times in the season will be sufficient, but if the slugs are numerous and continue their operations a long time, it must be applied more frequently.

The rose is generally grown singly, though many prefer making beds of the different sorts. Most roses will bloom better if rigorously pruned very early in the spring, but some sorts, as the yellow and moss roses, will not bear severe pruning. The climbing roses should have the old wood frequently cut entirely away, leaving only the young and vigorous shoots.

The rose is a gross feeder, and the soil in which it is planted should be made very rich. Before planting, the ground should be deeply and thoroughly prepared and a good deal of old, well-rotted manure dug in. Every year a liberal supply should be forked in, and frequent applications during the summer of soap suds or liquid manure will be found beneficial.—*Country Gentleman*.

### The Dairy.

#### On the Manufacture of Cheddar Cheese.

[In October last there was a magnificent exhibition of dairy produce at Kilmarnock, Scotland. The Highland Society contributed liberally for premiums. One of them was £20 for the best sweet milk cheese, which was carried by Mr. McAdam, who has kindly furnished an outline of the method he follows in its manufacture.—Ed. Transactions of Highland Ag. Soc'y.]

For various reasons I prefer making my cheese according to the Cheddar system. If the system is carried out with care and intelligence, one is almost certain of obtaining a lot more uniform and superior in quality than could possibly be made on the old Dunlop system. The latter is



neither so easy nor so cleanly. In regard to quantity I have found, after weighing the milk with the utmost care for two successive days, and making one-half on the Cheddar mode, and the other half on the Dunlop, that the result is always in favour of the Cheddar.

The difference, however, in the price of the two kinds of cheese is important. In 1859 I sold my whole stock made in that season at £3 12s. 6d. per cwt., or rather over 14s. 6d. a stone of 24 lbs. In 1860 I sold all my cheese made between 23rd March and 22nd of November, at £3 15s., or upwards of 16s. a stone. Last year I sent the whole to an agent in London, and after deducting all charges, had a return of nearly 14s. 6d. a stone.

On the other hand, I have known of no Dunlop cheese sold during the last five years which has realized anything like what I have done.—The difference has been at least 3s. per stone in favour of Cheddar.

I make my cheese once a day. The evening's milk, as soon as it is drawn from the cows, is put into shallow tin boynees to cool. Next morning this is put through a very fine wire sieve into the steeping tub, while the morning's milk is added as carried in from the byre. In May and the four succeeding months the milk put in this manner together in the evening and morning will generally have a temperature of about 80 degrees Fahrenheit. If it is not so high, a little of the evening's milk is warmed in boiling water to raise the whole to the above temperature. After this, the sour whey, annatto, and as much rennet as will coagulate the whole in an hour, are added and well mixed.

I generally put in about four to five quarts of very sour whey to about 140 gallons of milk. As soon as the curd is properly formed, I commence to break it with a hand-breaker made of tin and wire, which is somewhat like a riddle, and having a wooden handle about three feet long affixed to the middle. When partially broken, the curd is allowed to subside a little. As much whey is then drawn off and heated as will bring the whole up to a temperature of 80 degrees. After this, breaking is resumed, and the temperature maintained by adding more heated whey.

Nothing further is done for the next hour, but to draw off and heat as much whey as will raise the temperature to 100 degrees. At the end of the hour a portion of the whey is run off, and the curd is afterwards very gently broken with a shovel-breaker.

An assistant now gently pours as much heated whey as will once more raise the temperature to 100 degrees. During the time the whey is pouring, the whole is actively stirred, but afterwards more gently, till the curd has acquired proper firmness. I cannot say how long it may be necessary to stir. If too much acid is present, less time is required, and if too little acid, more is necessary. The time will vary, according to these circumstances, from twenty-five to forty minutes.

When stirring is finished, the curd is left half an hour, and then the whey is all drawn off. One side of the tub is raised a little to allow this to take place more perfectly. The curd is then heaped up to the highest side of the tub, covered with a cloth, and left for half an hour. After this interval it is cut into large slices, turned upside down, covered up, and left for another half hour. Then it is torn into thin strips and spread on a cooler, on which it is allowed to lie for another half hour. After thus being turned upside down, it is left another half hour longer.

The curd is then vatted and put into the press on which 28 lbs are suspended for about twenty minutes. Afterwards it is taken out, milled and salted. Cheshire cheese is used at the rate of 2 lbs. to the cwt. It is salted in the cooler, and if it is above the desired temperature it is allowed to lie, perhaps for half an hour, and stirred up once or twice. Our dairy being very warm. I am unable to cool down the curd as low as I could wish before making it up.

On referring to my diary, I find that not one cheeses I exhibited at Kilmarnock was below 68 lbs. when vatted. The cheese is made up between two and three o'clock, p. m., and a dry cloth put on it the same evening. What I make on Monday is carried to the cheese-room on Thursday. Each cheese only gets one dry cloth daily. The room is over the dwelling and dairy. Its temperature during the summer ranges between 65 degrees to 80 degrees. The specimens of cheese I exhibited at Kilmarnock was not subjected to any artificial heat.

I use an oak steeping tub in preference to any other. All the implements and utensils are kept as sweet and clean as possible. The weight or pressure put upon the cheese is the same throughout the different stages of the manufacture.

## The Apiary.

### Fumigating Comb in Bee-Hives,—Moth Traps.

EDS. RURAL NEW-YORKER:—In the impression of the *Rural* dated Nov. 16, 1861, I observed that a correspondent makes the following inquiry:—"Will a sulphur match burned under a hive kill the moth-worm, after removing the bees to another box or hive?"

Yes; the fumes of a burned 'sulphur match, if sufficient, will certainly destroy the moth-worm. Such combs only, however, should be fumigated as are freed from brood, as the fumes of sulphur would be likely to destroy it also. There is but a brief period when all the combs in a hive may be fumigated, without endangering the loss of any brood; the bees of course, should always be first removed, when in a common box-hive, to another box or hive. The period referred to is late in the fall and during the first part of winter. In Western New York,

breeding of bees ceases, in general, about the middle of November, and is again resumed about the middle of January ensuing. It will therefore be observed that there is a recess of about *sixty* days only, during the year, when a good healthy colony has no brood. At this period of the year, when there is no brood, there are but few moth-worms; they are most numerous in warm weather. Very likely there would be as many moth-worms as soon as breeding ceases as at any period during the cessation of breeding. As soon as breeding ceases, therefore, would be the best time to fumigate the combs to insure the destruction of the most worms. In box-hives not supplied with moveable frames, to determine the exact time when there is no brood in the combs, it would be necessary to resort to guessing! I trust that my contemporary is an expert at guessing. To guess correctly is a very essential qualification to such bee-keepers as advocate the old-fashioned box-hive! After having ascertained, by guessing, when the colony has no brood, the bees may be driven out into another box or hive, and the combs thoroughly fumigated. It would be advisable to confine the bees, as they might, having no combs or stores, be tempted to abandon their temporary home. They should be allowed plenty of air. All the crevices about the hive from which the bees were driven should be closed with some suitable material, to confine the fumes of the sulphur as much as possible. Were I to resort to this means of destroying the moth-worm,—but I trust I shall never be obliged to,—I am not positive that I should be content with less than a half-day's fumigation! The moth-worm would never have any desire to get into my hives again! But to return to our subject. After the combs have been thoroughly fumigated, it would be advisable to invert the hive, and subject them for a few hours to the exposure of the air. By this means, a large percentage of the scent of the sulphur will be removed. I should judge that the scent of the sulphur would be quite annoying to the bees: that is, if they were returned immediately after the fumigation, and before the combs had been subject to any exposure to the air. I would here caution the bee-keeper not to use too much sulphur, inasmuch as it be would quite likely to soil the combs; it would color them green.

It will be apparent that the foregoing directions are for fumigating combs in box-hives—hives not provided with frames. Box-hives are the kind that this correspondent, whose inquiry I am answering uses. It is, therefore, not so very strange that he should make the inquiry under consideration. On the other hand, had his bees been in properly made frame hives, and had he learned the fact that the progeny of the bee-moth is an extremely harmless enemy to good healthy colonies of bees, he would certainly

ly not have penned the inquiry which has claimed our attention.

It should be borne in mind by all bee-keepers, that the proper time to destroy moth-worms is early in the spring. They should be destroyed as fast as they make their appearance. At this season of the year every good colony should have more or less brood, which would prevent fumigating the combs with sulphur. We should, therefore, rely upon other means of destroying the worms. It will be obvious that, in case all the worms are destroyed, there would be no millers. The best way that I have found, is to examine my colonies (which, of course, are in frame hives,) quite often in the spring, by taking out the frames of combs, and killing all the worms. When the contents of a hive can be taken out, and each comb can be thoroughly examined on both sides, it must be apparent that it is not difficult to find *every* worm in the hive, and when found, to destroy them. A few worms killed early in spring, are equivalent to a very large number later in the season. Moth-traps are often very useful, and quite as often very injurious. When properly attended to, a great many worms may be caught and killed, but when not properly attended to, they furnish an excellent harbour for the moth-worms, where they often go through the necessary metamorphoses, and at last become millers. The moth worms generally find harboring places enough without providing them with any. It is quite often the case that too much dependence is placed on the moth decoys. The proper place to find the moth-worm is among the combs, and hence the combs should be examined often, and the worms killed before they are old enough to leave them to harbour in the moth decoys; comb being their only food, their ravages are finished when they leave them. All things considered, the *best moth decoys are strong, healthy colonies of bees.* M. M. BALDRIDGE.

Middleport, Niagara Co., N. Y., 1862.

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Pleuro-Pneumonia.

This disease appears to be still prevailing to a considerable extent amongst the cattle in Massachusetts, and has given rise to some discussion as to its contagiousness or otherwise. The attention of the legislature having been drawn to the existence of the disease in certain districts, a commission has been appointed to enquire into its extent, and adopt measures to arrest its progress. A writer in the *Boston Cultivator* thus narrates the proceedings of the Commission:—

“Immediately upon their appointment, the



Commissioners were notified by the Select-men of Milton, of the existence of the disease in that town in a herd from which two animals had died within a few weeks, and two had been killed by order of the Select-men, being beyond all hope of recovery. The Commissioners entered upon their investigations on the 27th of February, 1862. As investigations progressed, the truth, not only of the existence, but of the contagiousness of the disease, became so apparent, that notwithstanding previous opinions, and the circumstances under which their commissions were granted and accepted, those opinions and prejudices have vanished before the light of truth, and the Commissioners are quietly but faithfully performing the duties of their office, and in my opinion should be spared the odium which some have endeavoured to throw upon a former Board, and should receive the support and co-operation of every friend to the prosperity of the agricultural interest.

I proceed to state briefly, the rise and progress of the disease as developed in this vicinity during the past year, beginning with a pair of oxen sold in Brighton market, in February or March, 1861, one of which was, in the opinion of persons who saw him sick at the time. These oxen were purchased by J. F. Eaton, of Quincy, and taken into his herd. During the next few months not only these oxen, but several animals of his previous herd died; others were sold and taken into other herds, carrying the disease wherever they went; or, if to change the expression will leave the question more open, I will say, the disease *followed* wherever animals from that herd touched. At the present time, the disease has exhibited itself in twenty different herds, and in every instance is traceable to the Eaton herd either directly or through other herds connected with it. I am in possession of the names of the twenty individuals whose herds have been thus affected.

I am of the opinion that the names of some of the parties who have been instrumental in the spread of the disease, might justly be exposed; yet there are others who have ignorantly and innocently contributed in some measure to its diffusion, who have themselves been sufferers, not only in the loss of stock, but in the derangement of their ordinary and legitimate business.

Lest the publication of names should add to the already severe losses of this latter class, I will at present withhold entirely all not already given, holding myself in readiness, not only to give them, but to show, most conclusively, the connection between all of these herds. I deem it proper also to say, that upon different occasions many members of the legislature have witnessed cases of the disease; and I am not aware of an instance where individuals have thus put themselves in the way of ascertaining facts, that they have not only been fully satisfied of the existence of the disease, but also of its contagiousness.

P. STEDMAN.

## Miscellaneous.

**NERVOUSNESS OF PARROTS.**—Parrots are marvellously nervous birds, and, while young, will often throw themselves into such paroxysms of fear at the mere sight of a stranger, that they will even endanger their lives. They have an odd and unpleasant habit of scolding on such occasions, uttering loud, rough, grating cries, as piercing to the ear as the sound of a file or a saw, and stretching out their beaks with ruffled feathers and agitated gestures. Some birds retain this extreme timidity for a very long time, spite of all attempts to conciliate them. I have known a single parrot that was given quite young to a family well skilled in the management of birds, and particularly kind to their feathered pets. Yet, after the lapse of seven or eight months, the bird had only learnt to be tolerably familiar with the feminine portion of the family; and the approach of any man or boy of the same family, or of any stranger whatever, was sure to throw him into a paroxysm of terror.—*Every Boy's Magazine.*

**MINOR EFFECTS IN MONEY SPENDING.**—A correspondent of the *American Agriculturist* writes as follows on a subject of much interest. "There is one thing I would be glad to see more parents understand, namely, that when they spend money judiciously to improve and adorn the house, and the ground around it, they are in effect paying their children a premium to stay at home, as much as possible to enjoy it; but that when they spend money unnecessarily in fine clothing and jewellery for their children, they are paying them a premium to spend their time away from home—that is, in those places where they can attract the most attention, and make the most display."

**RELATIVE VALUE OF FOOD FOR MILK COWS.**—Several French and German chemists estimate the relative value of several descriptions of food for milk cows as follows: That 100lb. of good hay are worth 200lb. of potatoes; 460lb. of beet root with the leaves; 350lb. of Siberian cabbage; 250lb. of beet root, without the leaves; 250lb. of carrots; 80lb. of clover hay, Spanish trefoil, or vetches; 50lb. of oilcake or colza; 250lb. of pea straw and vetches; 300lb. of barley or oat straw; 400lb. of rye or wheat straw; 25lb. of peas, beans or vetch seed; 50lb. of oats; or 500 b. of green trefoil, Spanish trefoil, or vetches.

**YELLOW COLOR IN FLOWERS.**—This is the most predominant color in flowers, and is the most permanent. The yellow of the petals is the only colour which is not discharged by the fumes of sulphuric acid. If, for example, a lighted match is held under them, the purple or any other color will disappear, but the yellow will remain unchanged. Yellow is also a color which, more than any other, baffles the skill of the Photographer.

**ROADS.**—Though advanced as the present age is in civilization and christianity, yet the students of antiquity must acknowledge that we can by no means compete with the ancient Romans in one respect at least, namely, in the construction and stability of our public roads. Nothing can be more conducive to the health of a community than a good dry clean road. Why is it that we have such poor roads throughout the greater part of our State? It is not because we do not spend labor and money upon them. Far from it. But the trouble generally is in our system. We spend a few hundred dollars this fall, and a few hundred next, and so on, yet we always have poor roads. Did we at once lay out a few thousand on them, and, *if possible to find one*, give it to an honest man who would faithfully devote it to the intended purpose, we should soon experience quite a change in the condition of our roads. The following is taken from Dr. Anthon's excellent work on "Roman Antiquities;" it will show what kind of roads they had two thousand years ago:

"The public works were perhaps the greatest of all Roman works, and were constructed with amazing labor and expense. They were generally raised above the ordinary surface of the ground, and frequently had two carriage tracks, separated by a raised foot path in the centre. The centre indeed was always raised, so as to permit the water to run off easily.

"The miles were marked on stones. Stones were also placed at smaller distances for *travelers to rest on*, and to assist those who had alighted in remounting their horses, for stirrups were not used till a late period.

"The military roads were usually laid out in straight lines from one station to another, with little regard to natural obstructions, which were frequently passed by means of very extensive works, as excavations, bridges, and, in some instances, tunnels of considerable length. The solidity of their construction is clearly shown by the existence of many that have borne the travel of near two thousand years without material injury. The Roman engineers were very particular in securing a firm bottom; which was done, when necessary, by ramming the ground with small stones, fragments of brick, &c. On this careful prepared foundation, a pavement of large stones was firmly set in cement. When large blocks could not be conveniently obtained, small ones of hard quality were sometimes cemented together with lime, forming a kind of concrete, of which masses extending to a depth of several feet are still in existence. The most celebrated of the Roman roads, both on account of its length and the difficulties that had to be surmounted in its construction, was the Appian, leading first to Capua, and continued afterwards to Brundisium. It was hence called 'Regina Viarum.' Parts of it still remain, after a duration of more than two thousand years.

UPSILON.

**EXCHANGE OF SEEDS.**—It is a good rule in agriculture, to affect a change of seeds as often as once in every two, or three years. Why it is that the seeds of most of our field crops or grains do better when cultivated on lands at a slight remove from those on which they were matured, is a question which science has as yet been unable satisfactorily to solve; but such is the undeniable fact, and indeed is so obvious, and so clearly corroborated by all experience, as no longer to admit of doubt. The winter and early spring are favorable seasons for exchanging, as well as for procuring new and improved varieties of seeds, plants and scions.

## Editorial Notices, &c.

QUARTERLY AND WESTMINSTER REVIEWS FOR APRIL; AND BLACKWOOD'S MAGAZINE FOR MAY, 1862, American Edition; New York: Leonard Scott, & Co., 70 Eulton Street.

We have received from the publisher, through Mr. Henry Rowsell, of this city, the new numbers of the Quarterly and Westminster; which, as usual, contain valuable articles on the most absorbing topics of the day. These masterly British Periodicals treat with great clearness and ability, all subjects with which all well informed persons must seek to make themselves acquainted. The following articles constitute the numbers before us:—**QUARTERLY:**—Dorset; Hymnology; State and Prosperity of Turkey; Training of the Clergy; Life of Turner; the Eastern Archipelago; Stanhope's Life of Pitt; The Merrimac and the Monitor. **WESTMINSTER:**—The Mythology of Polynesia; Endowed Schools; German Life during the last two centuries; Mrs. Delaney; Caesar's Campaigns in Gaul; The Life of J. M. Turner; The Fathers of Greek Philosophy; Portraits of My Acquaintances; France and Napoleon III.; Lord Stanley; Contemporary Literature. The Contents of BLACKWOOD are as varied and rich as usual. The article on President Andrew Jackson will be read with avidity on this side of the Atlantic.

## BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

Toronto, 1861.

HUGH C. THOMSON,  
Secretary.



**THOROUGH BRED STOCK FOR SALE.**

**T**HE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

**FOR SALE.**

**A** LOT of thorough bred improved Berkshire Pigs of various ages.

E. L. DENISON,

Dover Court.

Toronto, Aug., 1861.

**Notice of Partnership.**

**T**HE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,

GEORGE W. BUCKLAND.

**NOTICE.**

**J**AMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsman and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

**IMPROVED BERKSHIRE PIGS**

**F**OR SALE by Mr. Denison, Dover Court, Toronto.

Toronto, April, 1862.

**A Thorough Bred 2 Year Old****AYRSHIRE BULL**

**F**OR SALE, by Mr. Denison, Dover Court Toronto.

April, 1862.

**GEORGE LESLIE,  
NURSERYMAN.**

**O**FFERS FOR SALE, THIS SPRING, A GENERAL assortment of Nursery Stock, consisting of

|                              |     |
|------------------------------|-----|
| Apples, Standard and Dwarfs, |     |
| Cherries, do.                | do. |
| Pears, do.                   | do. |
| Plums, do.                   | do. |
| Peaches, do.                 | do. |
| Appricots and Nectarines,    |     |

**GRAPE VINES,**

NATIVE AND FOREIGN.

CURRENTS, GOOSEBERRIES, RASPBERRIES, BLACKBERRIES, STRAWBERRIES, &c., &c.

The collection of fruits cultivated is extensive, and embraces all the different varieties that have been found of value, as well as those of late introduction.

The ornamental department is also extensive, consisting of Shade Trees, Shrubs, Roses, Hardy Herbaceous Plants, &c., &c., with a fine collection of Evergreens.

**LARGE TREES**

FOR

**STREET PLANTING,**

can be supplied, as also Evergreens, and Deciduous Plants for Hedges.

All the above are of FIRST QUALITY. Packing for a distance carefully performed by experienced hands.

All orders by post or left at the Nursery, will have prompt attention.

Catalogues forwarded gratis on receipt of one cent. stamps.

Address

GEORGE LESLIE.

Toronto Nurseries.

Toronto.

TORONTO NURSERIES,  
April 1862.

**Seeds! Seeds!! Seeds!!!**

J O H N GEORGE WAITE  
181 High Holborn, London, England.

**H**AS THE LARGEST STOCK of VEGETABLE, AGRICULTURAL, and FLOWER-SEEDS, IN THE WORLD, and can supply dealers on better terms than any other whose sale house, as he makes most extensive arrangements with none but experienced growers to produce his supply of seeds, which are raised and grown from stock selected under his own personal superintendence, and as they are all cleaned and picked in his own extensive warehouses by an auxiliary strength of several hundred men and women, kept for that purpose, he is enabled to recommend, with the greatest confidence, every description of Seed offered by him for sale, and he therefore invites Seed Dealers to apply for his Catalogue.

TERMS—Cash, or satisfactory reference in England.

March, 1862.

6t.

## VETERINARY SURGEON.

ANDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,

Is Published on the first of every Month,

AT \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

Subscription—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

Editors—Professor Buckland, of University College, Toronto, and Hugh C. Thompson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

## Contents of this Number.

|                                                                | PAGE. |
|----------------------------------------------------------------|-------|
| The Provincial Exhibition.....                                 | 321   |
| The Weather and the Crops.....                                 | 322   |
| Reply to Address to the Queen.....                             | 322   |
| International Exhibition.....                                  | 322   |
| On the Cultivation of Flax.....                                | 324   |
| Dr. Letheby on Diseased Meat.....                              | 327   |
| Rearing Calves on Milk or Linseed Meal.                        | 329   |
| Straw as Food.....                                             | 330   |
| Manures for Grasses .....                                      | 332   |
| The Earthworm—Its Use .....                                    | 333   |
| AGRICULTURAL INTELLIGENCE :                                    |       |
| Provincial or State Shows, 1862.....                           | 334   |
| Cultivation of Flax in Canada .....                            | 334   |
| Fat Stock Show at Poissey.....                                 | 337   |
| Royal Dublin Society's Cattle Show.....                        | 341   |
| HORTICULTURAL :                                                |       |
| Spring Exhibition Toronto Horticultural Society .....          | 343   |
| Spring Exhibition Hamilton Horticultural Society.....          | 344   |
| More About Dwarf Apple Trees .....                             | 345   |
| The Rose.....                                                  | 546   |
| THE DAIRY :                                                    |       |
| Manufacture of Sheddar Cheese.....                             | 346   |
| THE APIARY :                                                   |       |
| Fumigating Bee-Hives—Moth Traps.....                           | 347   |
| VETERINARY :                                                   |       |
| Pleuro-Pneumonia.....                                          | 348   |
| MISCELLANEOUS :                                                |       |
| Money Spending, Relative value of food for Milk Cows, &c. .... | 349   |
| Exchange of Seeds, Roads .....                                 | 350   |
| EDITORIAL NOTICES, &c. ....                                    | 350   |

## FOR SALE.

A LOT of thorough bred ESSEX Pigs,—bred from recently imported 1st prize animals which have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Olochmhor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
**Canadian Agriculturist,**

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, JUNE 16, 1862.

No. 12.

**The International Exhibition.**

33 CLAPHAM RISE, S.,  
LONDON, ENGLAND, }

*Editor of the Canadian Agriculturist.*

Since I wrote last I have been incessantly engaged in the examination of the various agricultural products of the British Colonies. We have no conception of the variety and value, and the amount of the productions of the Australian colonies until we see them. The progress they have made since 1851 is very remarkable. Queensland is exceedingly well represented. Ceylon, New South Wales, New Zealand, Victoria, and indeed, all those antipodean lands to which emigration has of late been directed, abound in the necessities of life, as well as the staples of manufactures. Specimens of wools of the finest quality, cotton, silk and other fibrous substances, the most valuable minerals, as also some of the best woods for ornamental purposes that can be any where found, are here on exhibition from those colonies. But no colony can compare with our own for the timbers that are useful for general purposes; nor is there a better collection of minerals from any one country than ours. We shall stand high in these two departments, and we will carry off several medals in the classes of Agricultural products.

The jury of which I am a member were yesterday all day in the French department and will be again to day. The exhibition of French agricultural products is very extensive, and the admirable way in which the articles are displayed does the exhibitors very great credit. Large collections have been made from the schools of Agriculture in the various sections of France.—The different cereals are displayed in the straw in a very tasteful manner, and all the varieties

of grains and seeds in glass vessels of various patterns. The whole display is exceedingly interesting, and embraces some two thousand collections by as many exhibitors. You may therefore judge of the amount of labour to be performed, and the difficulty experienced by the jurors in making their awards. Yet we hope that the work will be done and the awards made with a tolerable degree of satisfaction to all parties concerned.

The exhibition has now assumed, with a few exceptions, a finished appearance. Some few things are still being imported, but the confusion incident to the putting up has nearly disappeared. The display of splendid and valuable articles, worth untold millions of money, is now truly astonishing to the visitor.

The cloths from the Netherlands have particularly attracted my attention. They are of the finest quality, and manufactured from the finest wool that is produced in the world, and the prices marked upon them seem to be low enough to induce merchants from the various countries who need such goods to become purchasers.—A vast extension of commercial intercourse must result from this exhibition, while the inhabitants of the various parts of the world who are here assembled will obtain a knowledge of each other which will be by no means the least important benefit that will result from this great collection of men and things.

A contemplation of the whole leads to constant expressions of regret by numerous persons that that wise and good prince who was the originator of the first, should not have been spared to witness the success of this second International Exhibition. But such has been the will of The Great Disposer of the events of the world!

Yours, &c.,

E. W. THOMSON.

## Tanner's Bark as a Manure.

To the Editor of the Agriculturist.

SIR.—The pages of your Journal being ever open to give and receive all information pertaining to the advancement of Agriculture in this fine province, induces me to ask the opinion of the Agriculturist upon the following question:—Having an opportunity of procuring a large quantity of waste tanner's bark, which is the best way to convert it into an active manure? By answering the above in your next impression, you will confer a favor upon

Yours, &c.,  
M. D.  
St. Foy Road, County }  
Quebec, May 24th, 1862. }

### REMARKS.

*Tanner's Bark* occupies a very low position as a fertilizer. Having, however, once been the seat of life, and, therefore, organic, the ingredients of which it is composed, after the tanning principle has been extracted, must, when decomposed, possess in some degree a fertilising power. Something of course will depend on the varieties of wood that have been employed. The bark of the oak and other deciduous trees being preferable to that of the Fir tribe. It is difficult to bring tanner's waste into a rapid state of decomposition, and consequently undesirable to apply it to the land in a crude state. The most preferable mode of employing it is in compost, in connection with light earth and quick lime; the latter when thoroughly mixed in a liberal proportion to the whole bulk, say a tenth or fifteenth, will probably hasten decomposition, and bring the several ingredients of which the bark is made up into a state, in connection with water, for entering into the circulation of plants. Solid liquid manures may be and advantageously mixed with spent bark in a compost; but the use of lime is of the greatest advantage, in promoting the decay of woody fibre, and forms in itself a very valuable auxiliary to a manuring compost. We therefore recommend our correspondent to use the bark at his command in the manner above described; allowing it plenty of time, and thoroughly mixing it together. In this way he may obtain a manure of moderate power, and make it profitable, provided the distance of transportation be not too great.

For the information of our respected correspondent and readers generally, we append an

analysis of Tanner's Bark made, we believe, with great care and accuracy a few years since by Mr. Lonck, of England.

| Tanner's Bark.           | In state in which it was analysed. | Dried at 212° Fah. |
|--------------------------|------------------------------------|--------------------|
| Water.....               | 44.61                              |                    |
| Organic Matters.....     | 48.91                              | 68.58              |
| Inorganic Matters, (Ash) | 6.48                               | 31.42              |
|                          | 100.00                             | 100.00             |
| Containing Nitrogen..    | .069                               | .097               |
| Equal to Ammonia....     | .084                               | .118               |

In 100 parts of the inorganic portion (Ash) of this refuse, were found:—

|                                                                               |         |
|-------------------------------------------------------------------------------|---------|
| Salica and sand.....                                                          | 6.070   |
| Phosphates of lime, magnesia, and iron, containing 1.81 of phosphoric acid... | 5.230   |
| Carbonate of lime.....                                                        | 85.380  |
| Suphate of lime.....                                                          | 1.909   |
| Magnesia.....                                                                 | .215    |
| Potash.....                                                                   | 1.230   |
| Soda.....                                                                     | traces. |
|                                                                               | 100.034 |

It will be observed from the above analysis that spent bark contains a large amount of water, which alone is a sufficient cause to prevent its being applied at any great distance from the locality where it is obtained. Fresh from the yards, it probably is still more completely saturated with water than the specimen analysed.—As might have been expected, nearly all the nitrogenised compounds in the bark have been dissolved during the maceration in water, and only traces of nitrogenised matters are thus left in the organic portion of this waste; for which reason the value of this portion of tanner's bark is but trifling. Moreover, the composition of the ash shows that it principally consists of carbonate of lime and silica, substances of common occurrence, especially the latter, and therefore of little consequence; and that the amount of phosphoric acid and of potash, two valuable fertilising materials is, but very small.

Yet it has been well observed: "Tanner's waste may be used to advantage as a component part of compost heaps; or, partially dried by exposure to the air, it may be economically employed in some places as an absorber for liquid manure, or also for covering manure heaps, to prevent the loss of ammonia in them. Sufficiently dry, it may indeed be used with equal advantage for all purposes for which peat-mould is employed."



## Turnip Culture.

*Editor of the Agriculturist,*

As the benefits which are derived from the growth of this important crop become more widely known, it is yearly receiving a larger space in our fields, a space, yet, however, very diminutive indeed. To cultivate turnips successfully a good deal of labour and attention is indispensable, and perhaps, were we possessed of a practical knowledge of their culture, or proper mode of treatment suited to the requirements of our climate, we should not so often have occasion to complain of a want of success. At your suggestion and request, I shall mention a system which I have found to succeed pretty well; also, a few facts that came under my observation which may possibly be interesting to some of your readers:

In the fall the land intended for turnips was manured with farm-yard manure, and ploughed nine or ten inches deep; cross-ploughed in the spring as soon as it became sufficiently dry, then harrowed and rolled, ploughed again about a week or ten days before sowing, harrowed and rolled until a fine deep tilth was secured. The harrows should be kept going immediately after the plough, or that which is ploughed should be harrowed at least every night, to prevent the moisture from evaporating and the land getting too dry. By thus treating this length of time before sowing, the seeds of weeds are afforded an opportunity to sprout, and are destroyed when drilling commences. There are now many kinds of artificial manures used for turnips, such as guano, bones &c., which are effective in producing large crops, and are much more easily applied than farm-yard manure, on account of their small bulk. Long, poorly rotted manure is ill adapted to this crop, for two reasons: it is not in a fit state to be taken up by the roots of the young plants, at a time they most require to be forced, and it acts injuriously, especially if applied in large quantities in this way; it is with difficulty covered when closing the drills, and when a roller is passed over, a very shallow covering remains in which the seed is deposited; the warm weather and drying winds which we frequently have at this season of the year, dry up the earth on the top of the rough manure, and much of the seed does not sprout at all, and that portion which grows is not unfrequently much injured or quite destroyed before the roots penetrate through the moist earth beneath.

If possible, drills that are opened in the morning should be manured, closed, and sown in the evening. The proper depth to deposit the seed, is a question often discussed. I have these two last years made experiments with reference to this question, and have both times arrived at similar results. The machine with which I sowed would either sow half-an-inch or one-and-a-half deep; that portion which was sown the former depth, braided very irregularly, and

much of the seed never grew at all. That which was sown the latter depth, or one inch and a half, came up much earlier and was altogether a better braird. The only reason I can assign for so marked a difference is that the earth becomes so dry at the former depth—that the seed cannot sprout unless it be favoured with damp or moist weather, when a good braird is secured. The grand secret of success is frequent stirring with the cultivator, or as often as the land becomes hard or baked, taking the weeds in time and keeping them down.

J. W.

June, 1862.

[As our young friend has made so good a commencement, we shall hope to hear from him occasionally, giving the results of his observations and practice. Short practical articles, embodying the results of experience such as many of our readers could, with a little pains, communicate, are what we particularly need.

Eds.

### Report of the Minister of Agriculture for the year 1861.

*To His Excellency the Right Honourable CHARLES STANLEY, Viscount Monck, Baron Monck of Ballytramon, in the County of Wexford, Governor General of British North America, etc., etc., etc.,*

MAY IT PLEASE YOUR EXCELLENCY:

The undersigned, in conformity with the 6th section of 22 Vic., cap 32, has the honour to submit his annual Report, for the information of Her Majesty's Government.

#### IMMIGRATION.

The encouragement of Immigration forms a most important branch of the duties of the Minister, and is one to which the especial and most earnest efforts of the Department have been directed.

Frequent representations have been made of the great difficulties in procuring accurate information and statistics relating to Canada, experienced by intending emigrants, many more of whom would probably make Canada their home, were her vast resources and the advantages and inducements which she holds out, more widely advertised and proclaimed.

With a view of testing this question, and of enabling Canada to compete more favourably with other British Colonies and the United States, for the advantages attendant upon the settlement of certain classes of emigrants among us, additional agents have been temporarily appointed to represent the emigration branch of this department in the north and south of Ireland and western Europe, respectively.

Mr. Donaldson resumes his old appointment at Londonderry as agent for the north of Ireland; Mr. E. J. Charleton has been appointed to the southern and eastern portion of that country, and Mr. A. H. Verret to western Europe.

With a desire to facilitate the discharge and enlarge the sphere of duties of the Emigrant Office of Lower Canada at Quebec, Mr. Drolet and Mr. Stafford have been nominated Assistant Emigrant Agents for Lower Canada.

Great care has been taken to impress upon the emigrant agents abroad, the importance of their mission, and the fact, that certain classes only of Emigrants are sought for, or desired by the Province. The following extract from the "Letter of Instructions," issued to them by the Minister of Agriculture, relates to this subject:

"In conveying information respecting this country, you will of course readily understand the necessity of great caution and entire truthfulness in any statement you make, in order that the Government may not be involved by representations in any respect fallacious, nor the emigrant, or public abroad be in any way misled. In addition to the authorised documents which you take with you, you will be supplied from this Department with such information bearing on the subject of your mission as you may, from time to time, apply for, or as it may be considered desirable to send you. These communications and your experience and long acquaintance with this country will enable you, at all times, to give such information as shall be really accurate, respecting our mines, forests, fisheries, agriculture, and the Colony generally.

"You will constantly bear in mind that a promiscuous immigration is neither desirable nor sought for: Canada, at present, does not, and for the coming year most probably, will not offer any large field for unskilled labor, since there are no large public works, nor railway extensions in progress. At the same time skilled agricultural labourers can always find ready employment, and female domestic servants are always sure of good wages and certain employment.

"The class of people to whom, especially, Canada offers a desirable home comprises those who on their arrival here are prepared to enter on the Public Lands as settlers.

"The Provincial Government, as you are aware, has recently opened new roads in Upper Canada and in Lower Canada, and has laid out for settlement and authorised free grants (not exceeding 100 acres in each case) of the lands through which these roads pass. These free grants are, however, more advantageous to those acquainted with the climate and country than to the poorest class of emigrants, and those just arrived in the country.

"You will ascertain at the Crown Lands Office the exact position of these free grants now available, and explain fully to persons seeking information the advantages and disadvantages attendant upon their settlement."

The exertions of Emigrant Agents must not, however, be confined to the vast fields of Europe, but it is advisable that they should also be directed to different localities in the United States where former inhabitants of Canada may be found in small communities. Preliminary action has already been taken in this matter by circulating amongst them, in their own language, accurate information as to the advantages which Canada offers to the industry, labour, perseverance, of the Colonists.

The task of collecting and disseminating information likely to be of use to intending emigrants, has been vigorously pursued by the Department. The circular to the Reeves of the townships of Upper Canada and to the Municipal authorities in the Lower Province, making enquiries relative to the number and classes of emigrants sought for in each different locality, and seeking information as to the prices at which "cleared" farms can be purchased or rented, &c., has been re-issued, and the result, compiled and published in a tabular form, circulated largely for the information of emigrants.

In addition to the above, another circular, enclosing a series of questions relative to the quantity and quality of land for sale, statistics and prospects of the settlers, how many are emigrants, &c., nationality, whether any improved farms are for sale or to be let, demand for labour, and general suggestions, has been issued by this Department to the various Crown Land Agents throughout the Province.—The information contained in the answers received to these questions has been condensed and embodied in a pamphlet issued from the Emigration Office by Mr. Buchanan, and extensively circulated in the English, French and German languages.

#### COLONIZATION ROADS.

*Upper Canada.*—From the Reports for the past year of the resident agents on the free grant Road in Canada West, and which will be found in the Appendix, Nos. 1, 2, 3, 4, 5 and 6, the progress on these roads will be considered most encouraging and satisfactory. The number of families settled on these roads, the value of the season's produce, and the number of acres cleared, increase steadily year by year, and afford a true index of the prosperity of the settlements.

The annual Reports of Mr. Gibson, chief superintendent of roads for Canada West, and of Mr. Snow, superintendent of the Mississippi Road, with the usual approximate statements of the work done on the Roads in Canada West up to 31st December, 1861, and a statement of the total number of miles open to the same date accompany this report. (Vide Appendix No. 8.)

*Lower Canada.*—The management of the Lower Canada Colonization Roads has hitherto been undertaken by the Department of Crown Lands. Arrangements have, however, since the beginning of the month, been made, to transfer



the supervision to this Department, which will for the future receive the reports from the resident agents, collect statistics, and control the management of the Lower Canada Roads, in a manner precisely similar to that heretofore adopted in respect to the Roads in Upper Canada. In future, therefore, the Department will be in a position to give details on the important subject of Lower Canada Colonization, which it finds itself at the present moment unable to furnish. From the Returns of the Department of Crown Lands, it seems that there are in Lower Canada 91 Colonization Roads extending over the whole of the Lower Province, on both sides of the St. Lawrence, and on the northerly bank of the River Ottawa, from Gaspe to Pontiac.—During the past year 107½ miles have been completed, 79½ miles opened, 13½ miles repaired, and eleven large bridges built, involving altogether an expenditure of \$52,683 06.

In the Report of the late Mr. Boutillier, for the year 1860, the total number of miles opened in these roads is stated to be 1,458. It would appear therefore that at the close of last year the total number of miles opened was 1,537½.

Detailed information respecting the Elgin and the Matane and Cap Chat Road, may be found in the reports of the resident agents attached to the report of the Commissioner of Crown Lands.

#### AGRICULTURE.

The circulation of the customary queries relating to the Agricultural interests and prospects of the Province has been resumed this year, but the replies which have been made are neither in number nor in the information which they convey, so satisfactory as could be desired. Notwithstanding that upwards of 800 circulars were issued in December last to the County Agricultural Societies, the Wardens, Reeves, and other influential persons in Upper Canada, and 500 to the Agricultural Societies, Municipal authorities, and others, in Lower Canada, not more than 45 to 50 returns have as yet been received from either section of the Province. This apathy and indifference to the efforts of the Bureau are most discouraging, and entirely preclude the possibility of arriving, at the present time, at any just conclusion as to the result of agricultural labours during the past year, or of the agricultural progress the country is making.

This report has been delayed in the hope that an abstract of the agricultural statistics for Canada, obtained by the Department from the census returns for 1861, would be attached. Though the most strenuous exertions have been made, it has been found impossible to include it without delaying the Report longer than is considered desirable. The agricultural returns for the whole Province will be ready in a few weeks, and will be immediately published.

The cultivation of flax has lately received much attention at the hands of the Government.

This branch of Agriculture has hitherto been much neglected, notwithstanding that the soil and climate of Canada seem admirably adapted to its success. In order to promote the more extensive production of flax, and with the view of affording the fullest instruction and information as to the mode of scutching and dressing it, the Government has lately imported six of "Rowan's new patent flax scutching machines," to be distributed over both sections of the Province, subject to the order of the Department.

The undersigned has decided that these machines shall be distributed under the advice of the Agricultural Boards, and it is proposed that they shall be moved from place to place throughout the country, and thus extend their usefulness over as wide a district as possible. The absence of proper dressing mills appears to have, hitherto, prevented Canadian farmers from cultivating flax to any large extent, for though, as Mr. Donaldson (to whose representations and exertions in the matter this Department stands much indebted) states, there are some very good mills in the country, such as that of Mr. McCrea, at Canestoga, in the County of Waterloo, that of Messrs. Blaikie & Alexander, at Norval, and others, yet in the replies to the agricultural queries to this Department, almost universal complaint is made that no facilities exist for dressing and preparing any flax which may be grown.

#### CENSUS OF 1861.

Considerable progress has been made in tabulating and preparing for publication the statistics collected by the Census returns last year. Already have the detailed statistics relating to origins and religions of both sections of the Province been published and distributed in a pamphlet form among the members of the Houses of the Legislature. The agricultural portion of the Census is nearly completed, and is being rapidly prepared for the printers. Every effort is being made by the Department to bring the whole work to a conclusion at the earliest possible date.

#### BOARD OF ARTS AND MANUFACTURES.

The annual Report of this Board as prescribed by the 28th sec., 10 Vic., cap. 32, has been received.

The general condition of the society appears to be satisfactory, but the withdrawal of all Government aid from the Mechanics' Institutes appears to have resulted in the failure of some of them, and in crippling, materially, the usefulness of others. Some few of them, however, in cities and towns are not only self supporting but prosperous.

The statements of the treasurer of the Board show a balance in hand after payment of all expenses of \$1,923 63. The valuable works belonging to the Patent Office, left under the charge of the Board of Arts and Manufactures, are highly appreciated, and several donations of

Tessellated pavements with other and interesting specimens of manufactures are acknowledged. The library is entirely free for consultation, and is said to be more readily accessible than any other free library in the Province.

#### IMPROVEMENT FUND.

The "Improvement Fund" for 1859, accruing to the several Municipalities in Upper Canada, to be expended in Roads and Bridges is now in course of distribution.

#### PATENT OFFICE.

The business of the Patent Office is steadily increasing. During the past year, the fees received for Patents of Invention amounting to \$3,020 00, those for assignments, copies of specifications, and registration of Trade Marks to \$194 30, amounting together to the sum of \$3,214 00, which has been paid to the credit of the Honorable the Receiver General. This department of the Bureau has now become self-supporting.

The Royal Patent Commissioners in London, continue to present to the Bureau the specifications and engravings of patents issued in the United Kingdom. They now amount to 500 volumes.

Since the removal of the Government to Quebec, 443 models have been received by the Patent Office.

It is much to be regretted that want of accommodation has hitherto deprived the public in a great measure of the advantages which they would otherwise derive from the museum of models and valuable library of books. The models should be classified, numbered, arranged, and a descriptive catalogue should be prepared. The room might then be open to the public, say daily during the session of Parliament, and perhaps twice or thrice a week during the remainder of the year.

In conclusion the undersigned alludes with the deepest regret to the loss which this department has sustained in the decease, during the past year, of Mr. W. Hutton, for many years the active Secretary of the Bureau.

The whole humbly submitted.

N. F. BELLEAU,

*Minister of Agriculture.*

Bureau of Agriculture, Emigration, }  
and Statistics, Quebec. April 1862. }

#### The Preparation of Food for Cattle.

The directors of the Royal Agricultural Society of England have recently introduced the practice at their monthly meetings of discussing agricultural subjects. In the *Irish Farmer's Gazette* of the 17th ultimo, we find the following condensed report on the interesting and im-

portant subject of "preparing, mixing, and cooking of food for cattle." Mr. Frere, the editor of the society's journal, introduced it to the meeting, and based his observations on Professor Voelcker's paper on the composition and nutritive value of straw, which appeared in the last part of the Society's Journal; on Mr. Lawes' reports of his experiments conducted on the Duke of Bedford's estate; and, finally, on "his own small experience in cattle feeding last autumn." Mr. Lawes stated, however, that the results of the experiments which he had made, and to which Mr. Frere alluded, could not be taken as a standard in so far as related to the comparative merits of cooked and dry food, having been conducted for another purpose altogether—namely to ascertain the amount and composition of the dung of cattle, and more particularly with reference to the loss of ammonia. We may, therefore, set aside those of Mr. Frere's remarks which were based on Mr. Lawes' report, as being inapplicable to the subject under consideration, and pass on to some of his subsequent observations.

He alluded to the practice of giving cattle first a bait of meal, then a bait of turnips, and so on; varying the food at different parts of the day, informing the meeting that the most experienced feeders he had met with considered it best to mix roots, cake, and meal, giving the same mixture at each feeding time. Referring to his own experience in cattle feeding last year, he stated that he had been

"Anxious to try the effect of cooking in the case of 10 beasts, 2lbs of bean-meal boiled and poured over the chaff was to stand for 24 hours; 2lbs of cake were then added to this mixture, and it was served up next day. Of these 10 beasts one obstinately refused to eat the mixture. It was a white bull with a black nose, and was decided the worst beast of the lot. So stontly did it reject the mixture that it would eat the straw turned out from the cart horses, rather than this prepared food. It was then ordered to have bean-meal unboiled, the meal being still mixed with straw, which was moistened the day before, and a small quantity of malt combs, which was also moistened on the previous day. At this moment that which was the worst beast of the 10 was indubitably far the best: it weighed over 8 stones more than those which were of the same size when they came in, and 1 cwt. more in live weight than the smaller animals did when they came in. In short, it weighed 56lbs. more than any of the other beasts in the lot. He mentioned this case to Professor Voelcker, who, in his reply, said:—The incident you mention with respect to your black-nosed bullock is curious. I don't like to boil pea-meal, or to pour it afterwards over roots and chaff. Substances so rich in nitrogenized matters as peas and bean meal are very apt to give rise to putrefaction, instead of



lactic acid fermentation. For the same season, it won't do to mix much cake mucilage with other food, and to let it be a long time. If soon consumed after the addition of the cake jelly, no harm is done; but if left too long after the addition, incipient putrefaction and mould, both of which are highly injurious to the preparation of cattle food, become perceptible in the mess. The more nitrogenous matter in the material employed, the greater its tendency to putrefy. When malt combs are soaked in water and then mixed with chaff, lactic acid is readily formed if there is sufficient water present and the temperature is sufficiently high. Sugar, in the presence of much water and a sufficient quantity of albuminous matter, becomes changed into lactic acid—an acid which has the same per-centic composition as milk sugar itself. Too much or too little albuminous matter is alike unfavourable to the production of lactic acid."

Mr. Frere stated that he gave each of these animals every day "1lb. of malt combs, 3lbs of linseed, 2lbs. of cotton cake, 3lbs of bean meal, 2lbs. of carob or locust bean, 2lbs. of mangel wurzel, and 8lbs of straw." His impression was that there were more economical modes of preparing food for cattle than by boiling.

Mr. Lawes did not think there was any saving effected by cooking food for cattle, if the increased labour and cost of fuel were taken into consideration; nor did he believe that although the use of cooked food might produce a greater quantity of meat than dry food, that the increase of meat produced by the former mode was as valuable as that which was produced by the latter, although less, perhaps, in quantity. Meat produced by the use of cooked food was not satisfactory to the consumer, as it "boiled away," because all animals as they fatten have a certain amount of water displaced; that is to say, they contain less and less water as they approach "ripeness" when fed on uncooked food; but the water in the flesh increases, as well as the fat, instead of being diminished, when the food given is cooked, and he illustrates this by the following statement:—

"Some time ago he fed one animal on steeped barley and another on dry barley, with a view of treating the merits of the two systems of feeding. The animal which was fed on the steeped barley increased very fast, while the increase in the case of the one fed on dry barley was comparatively slow. They were both killed; the loins and other parts were cooked on the establishment, and it turned out that there was much more waste in the former than in the latter."

Notwithstanding his own opinions as to the relative value of meat produced by cooked and uncooked food, Mr. Lawes considered that sufficient facts were still wanting to enable any one to speak confidently on the subject; but, on the whole, he thought that cooking was only advisable when food was exceedingly scarce.

Mr. Dent spoke in favor of pulping, having known many gentlemen who had given up the use of cooked food, but none who had abandoned pulping after having once tried it. He was anxious to learn, however, whether the pulped food should be given fresh or in a state of fermentation; also as regarded store beasts, the best proportions of roots and chaff; and whether it was most advantageous to mix dry food or oil-cake with roots and chaff, or to give them separately. He further stated that he had found the use of malt combs profitable in the case of milch cows, as the yield of milk fell off whenever the supply of malt combs ceased, and improved when this description of food was again given to the cattle. Mr. Dent's enquiry as to the propriety of giving the pulped roots in a fresh or fermented state is one of much practical interest, and Mr. Lawes' reply on this point was as follows:—

"It must be borne in mind that all fermentation was the combustion of that which was the most valuable of all the elements of food, namely carbon. An animal would eat till he had got sufficient carbon in his stomach, and then stop. Carbon was the measure of his feeding powers; he stopped eating when he had enough soluble carbon. That was the first substance that would disappear during fermentation; and therefore, he did not think it likely that there was any economy as regarded food in a process of that kind."

Mr. Lawes was, therefore, in favour of giving the pulped food in a fresh state, as

"There was a great risk of fermentation proceeding too far, and he thought many persons had given up the practice of mixing and pulping food, and keeping it in heaps, from the very fact that fermentation went on too rapidly.—Even if it did not putrefy, they lost the most valuable elements of the food."

Mr. Frere having asked for information "as to the influence of food in which incipient fermentation was commencing upon the work of digestion," Professor Simonds referred to this point in the first place, when pointing out the physiological view of the question, which he did in the following manner:

"As regarded the question as to whether the commencement of putrefactive fermentation was likely to interfere with the process of digestion, it was well known that the food of carnivorous animals was consumed chiefly when in a state of putrefaction; but the antiseptic powers of gastric juice were so strong that it was rendered sweet at once. The gastric juice of carnivorous and herbivorous animals did not differ, so that the same action would take place with reference to the consumption of food in which putrefactive fermentation had taken place. He did not, consequently, consider it likely to interfere with the digestive powers of the animal. His opinion with reference to all these matters was that they dealt too much with chemistry, and not

sufficiently with physiology. Mr. Lawes had truly stated that the question was, commercially speaking, whether giving cooked food would in reality pay. They ought not to be surprised to find that cooked foods were not so well calculated to build up the animal and obtain a good quality of flesh. It had been shown that it, technically speaking, boiled away; and the reason given, no doubt, was the just one, that if food was given containing a large quantity of water, more water was absorbed in the organization of the animal than if dry food were given. Speaking as a pathologist, he believed that a great number of the diseases of the lower animals were to be traced to the bad quality of blood, arising from an excess of water and a deficiency of nitrogenised food. The practical farmer knew very well that in the lambing season if the ewes eat too much wet turnips or wet tops a bad quality of blood was produced, and the ewes would become diseased and die unless a large quantity of dry nitrogenised food were given. There was another question with reference to cooked food. Admitting for a moment that it was an advantage to the animal, and that it accumulates a large quantity of flesh in a short space of time, and that they regarded that, for argument sake, as so much gain, he was inclined to think that it arose from the facility it gave for the digestion of the food by anticipating a part of the process which it underwent from the action of the gastric juice.—For a simple-stomached animal like the horse, they knew very well that the food would be at once converted into a fibrous mass; a chemical change took place, and that pulpy material on passing into the intestinal canal became mixed with various secretions, including bile; another chemical change took place, and the chyme was separated from the chyle, and the latter being the nutritious portion of the food, was absorbed into the blood. The question was, whether in giving an animal, and especially a ruminant animal, cooked food, they did not to a considerable extent supersede mastication; if so, they would supersede insalivation, and thus interfere with one of the first processes of nature, and do harm. What was the action of the saliva on the food? Without going into the intricacies of the question, they had the amylaceous parts of the food first converted into sugar or gummy matter, which was a soluble material chemically allied to sugar, and, as has been stated, it was only after a sufficient quantity of carbon had been obtained that an animal ceased to feed. A provision was made in the ruminant animal for stirring up, if he might so express it, the food; and a chemical change took place in its character before it passed into the true digestive stomach. There was a re-mastication and a re-insalivation; and, inasmuch as the secretions coming from the rumen were very analogous to those with which the food was mixed in the mouth, it remained not only mixed

with saliva a much longer time, but was mixed with a much greater quantity of saliva. If, then, by the use of cooked food they dispensed with part of the operations of nature and sent the food quicker into the intestinal canal, they would dispense with the process of re-mastication and re-insalivation; and he could easily understand why, although a large increase might take place in bulk, the quality of the animal might become bad. For the same reason it was objectionable to pulp food too fine, but they might with advantage soften chaff that was four or five inches long, so as to commence the process of converting the amylaceous part of the food into sugar without interfering with the functions of the rumen. There was no doubt in the world that they could induce animals to eat a larger quantity of food by imparting a relish to it, which they could do by throwing a small quantity of cooked oil-cake over it; but, on the whole he was not in favor of the so-called cooking of food either as a means for the preservation of the health of animals or of promoting the process of digestion. He was inclined to think, physiologically speaking, that by pulping food, cutting straw, and mixing it with a solution of oil-cake, they would gain their point at a much lower expense, and in a much better manner for the animal economy."

The discussion closed with Professor Simonds' valuable remarks; and we need scarcely remind our readers that the question of cooked food is one which has been frequently agitated, and which still remains, as Mr. Lawes' observations show, in a somewhat uncertain state. That cattle will not pay if fed solely on cooked food, although they fatten more quickly than those fed entirely on raw food, has been long known to experienced feeders; but it has also been shown that a portion of the food may be cooked with advantage. This has been proved by several cases, the details of which have been laid before the public: at the same time, it is likely that pulping will, as a general rule, supersede cooking, being less troublesome and less expensive, especially when the pulping machine is driven by steam or water power.

### Liquid Manure Farming at Myre-Mill, Scotland.

The glory of Myre-Mill has departed. The engine for the most part stands idle on the hill; the wooden coverings of the mouths of the monster tanks are broken or rotting, and the manurial contents are hardly thought worth the expense of distribution.

Of course, everybody interested in farming pursuits has heard of Myre-Mill, where liquid manure farming was long supposed to be carried on to the greatest perfection and profit. It was first brought prominently before the public in the "Minutes of Information" re-



garding sewage manures, issued by the General Board of Health. From this account one would have supposed that the proprietor, who himself carried on the farm, under the immediate superintendence of a practical farmer, was about to realise a speedy fortune from his enterprise. We were told that "one field of ray-grass, sown in April, had been cut once, fed off twice with sheep, and was ready (August 20) to be fed off again." In another field, that had yielded within the year four cuttings of the estimated weight of nine or ten tons per acre, the aftermath was valued at £250 per acre, for sheep-feeding purposes. Swedes which had received a supply of liquid manure were ten or twelve days earlier than another lot that had got double the quantity of solid manure without the liquid application, and were better than those in a neighbour's field to which dozens of loads of farm-yard manure had been applied, in addition to 3 cwt. of guano and 16 bush. of bones per acre. Carrots and cabbages were equally susceptible to the fertilizing influence of the liquid manure; and Italian ray-grass sprung up on its application almost like the grass in that remarkable district "down east," where, though it were cropped close at night, you were lost in it by the morning, and where, if you planted carpet-tacks in the evening, they would be tenpenny nails by sunrise. And then the effect of this liquid manuring was by no means evanescent. "There is not the slightest appearance of exhaustion in the land; its fertility appears to increase. I was informed that, before the liquid manure was used, the land would not keep more than a bullock or five sheep to the acre; now it will maintain, if the crops are cut and carried in, five bullocks or twenty sheep to the acre." Somehow or other, the money returns were by no means such as these rapturous accounts of fertility implied. Those magnificent crops, instead of being a source of profit, were singularly the reverse, and the proprietor's banking account, so far as it concerned Myre-Mill, grew smaller and smaller every year under the frequent cuttings and tremendous weights of Italian ray-grass. The reason was simple—the cost of production was a question never taken into consideration under this system of very high farming. When it did compel attention some five years ago, Mr. Kennedy deemed it advisable to surrender his farm into the hands of a tenant farmer, who of necessity was bound to count the cost, and the calculation was far from favourable to the practice so extensively and vigorously pursued by his landlord.

Being in Ayreshire the other day, we paid a visit to Myre-Mill, which is situated about a mile from Maybole, a short distance from the public road between that place and Ayr. The steading occupies a considerable elevation, nearly in the centre of the farm, and

possesses an unusual amount of accommodation for a farm of between 300 and 400 acres. It is very easy to see that Myre-Mill was built under the influence of much more liberal ideas than such as dictate the erection of farm-steadings for tenant-farmers—that it had been a proprietor's pet place. The byres, barn, granary, stables, store-houses, &c., are on a scale of sufficient magnificence for a farm of double the superficies. But doubtless it was expected that the liquid application would more than double the produce raised by the common method of manuring. The tanks for the reception of the liquid manure from the byres, stables, &c., occupy a great square in front of the root house, from which the ground was excavated, the sides being then solidly built round with stone, after which the hollow space was divided into four unequal compartments by substantial walls. The tanks thus formed measure respectively in feet:—48 × 14 × 12; 48 × 14 × 15; 72 × 14 × 12; 72 × 17 × 12. They are numbered 1, 2, 3, 4, and each has a separate communication with the well, from which the contents are pumped up. A twelve-horse engine works the pumps, and it is stated that about 4,000 gallons, which is the quantity usually allowed for an acre, can be distributed in an hour. Iron pipes, with hydrants at convenient spots, are laid over the whole of the farm, and with the hose the extent of delivery amounts to about 1,900,000 yards. The cost of this machinery was £1,586, divided as follows:—Tanks, £300; steam engine £150; pumps, £80; iron pipes, laying, and hydrants, £1,000; gutta-percha and distributing pipes, £56. One great draw-back is the want of water to mix with the manurial flowings from the courts. This has to be raised a height of 70 feet from a burn flowing through the hollow in front of the steading.

On the day of our visit, however, the tanks were choke full, and water from the steading was allowed to trickle away down the hedge-side into the burn, from which the supply was usually to be derived.

The present tenant, Mr. Duncan, has little faith in the virtue of the application. At all events he does not think that it is worth much more than the cost of its distribution. In washing in guano or other manurial substances into the roots of the plants in dry weather, he believes to be valuable; but in ordinary cases he is of opinion that the money expended in applying it would be as profitably laid out in the purchase and application of solid artificial manures. In order to test the correctness of this notion, Mr. Duncan, when urged upon by the proprietor—who is still a strong believer in liquid manuring, notwithstanding the losses he sustained thereby—to distribute the tank-liquid on one of the out fields, offered, if the landlord would be

at the cost of applying the liquid to a portion of the field, to raise a better crop on the other portion with solid manure at a like expense per acre. The proprietor, however, declined the challenge.

It might be supposed from what we have said that Mr. Duncan was an out-and-out opponent of the system. This is not the case, however, he entered the farm with the belief that its value was enhanced £1 per acre by the tanks, pumps, and piping, but his opinion now is, that these are not worth a fifth or sixth of that sum.

In reply to our enquiries as to whether the application did not permanently benefit the soil—whether the field from which the immense crops of Italian ray-grass had been raised did not develop in a corresponding degree, the other crops in rotation, Mr. Duncan stated that he thought more was due to the heavy manuring than the watering with liquid from the tanks.

We are not disposed to think so lightly of the value of liquid manure as Mr. Duncan appears to do. Undoubtedly great results have been obtained from its application, but it is equally certain that its value has been by some very much over-rated; and we are doubtful whether it can be shown to be profitable where great and costly works have to be erected for its collection and distribution. But where farms are so situated that the liquid can be distributed over the fields by gravitation, there can be no question as to the benefits to be derived from its use, and it would be gross waste in such circumstances to allow it to flow away into a ditch or a burr, to stimulate the weeds in the one, and poison the trouts in the other.—*Scottish Farmer.*

### Pig Breeding and Feeding.

A few days since a lecture on the breeding and feeding of pigs was delivered to the members of the Worcestershire Agricultural Society, by Mr. Baldwin, of Bredon House, near Birmingham.

In opening the lecture, Mr. Baldwin said—In 1845 he entered on a farm at Kingsnorton. In 1846 he purchased two gilts and a boar, of the Tamworth breed, from his cousin, Mr. T. Baldwin, of Barnt-green, who was famed for his breeds of Tamworths; and although he (the lecturer) commenced breeding with three pigs in 1846, in 1851 he sold £1,000 worth of store and fat pigs within one year; and in the years 1852, 1853, 1854, and 1855 he sold £1,000 worth each year. The idea of feeding such numbers of pigs was first conceived by him at a county meeting at Worcester, in 1849, after free trade had come

into operation. The meeting was called to take into consideration the state of agriculture, and to petition government to pass another act for its protection. At that meeting he (Mr. Baldwin), believing it impossible to return to protection, moved an amendment to the effect that, as the tax upon malt was a burden upon the British farmer, it should be repealed. Mr. Curtler was the principal speaker in favour of protection, and, during his address, produced many samples of foreign produce at amazingly low prices. Among them was a good sample of Egyptian beans at 9s or 9s. 6d. per bag; Indian corn at the same price, and Dantzic wheat also very low. Mr. Curtler then exclaimed, "Gentlemen, can you grow them at these prices?" He (Mr. Baldwin) being a consistent free-trader, looked on the bright side of the question, and began to ask himself how he might turn the low price of corn to good account. It struck him that as he had a great many store pigs, he would feed them, instead of selling them as stores. He accordingly bought a large quantity of Indian corn at from 9s. to 9s. 6d. per bag, to begin with; and within two years and a quarter from that time he bred, fed and sold £2,000 worth of pigs, and cleared, after paying all expenses, £500, besides making a vast amount of manure, which he considered far better than guano, because more durable. During the greater part of these two years and a quarter, Indian corn, Egyptian beans, and feeding barley ranged from 9s. to 12s. 6d per bag of ten score, and he sold his fat pigs at from 7s. 6d. to 8s. 9d. per score. The plan which he adopted in breeding was to put the sows to the boar in November, and pick the breeders principally from the earliest pigs. When he had got his stock up to about 40 breeding sows, in picking the breeders he used to pick them several times over, as it frequently happened that those which looked the prettiest and best when young altered considerably when they got three, four, or five months old. The rule was to pick long-growing pigs, and those that were straight and thick through the shoulder and heart; and experience had convinced him that his method of choosing was a correct one. There need be no greater proof of that than the number of medals and prizes he had obtained. He always kept to the Tamworth breeds, generally purchasing the boars, but breeding the sows. If he found the pigs getting too fine, he purchased a good strong boar, and if the animal exhibited tendencies the other way he picked a boar of good small bone, but was always particular to pick a boar that was thick through the shoulder and heart, and a straight-growing pig of the same colour and breed. By carefully following this plan he got the breed so good that it was a rare



occurrence to see even a middling pig in the flock, though he bred from 250 to 300 each year. His plan of keeping was as follows:—As soon as the sows littered they were kept on kibbled oats, scalded, with raw swedes or cabbage; and when the pigs got to the age of three weeks or a month, he turned the sows out from them for a short time every day, and gave the pigs a few peas or a little Indian corn while the sow was away. When the weather was fine and warm the pigs went out with the mother into a grassy field for a short time. He found that young pigs, from the age of three weeks, required dirt or grit, and therefore, if the weather was bad, and they could not be turned out, it was necessary to put some grit into the sty. This was very important, as he believed it was quite necessary for the proper digestion of their food. He had had young pigs looking very bad and drooping, but when turned out, that they might get dirt, they soon became all right again. In fact, it was absolutely necessary, during the whole life of a pig, to allow it an opportunity of getting grit or dirt, or it would not thrive well. At seven or eight weeks old all the pigs he did not require for breeding he had cut, and began to wean them a fortnight afterwards. He then turned them out into a grass field, with a hovel for them to run into, and allowed each pig a quart per day of peas, Egyptian beans, or Indian corn. English beans did not answer for young pigs, being too heating. He gave them one pint of corn in the morning, and the other in the evening, with regularity as to time and quantity, and found it better to give to them on the grass, in a clean place each time, than in a trough, as it prevented quarrelling, and each pig got his share. With this quart of corn per day, and what grass they got during the seven months of the year, with nothing but water to drink, the pigs would, on an average, make 5 lbs. of pork each per week. After eight months, he allowed an extra half-pint of corn per day. At the present price of corn the allowance would cost about 1s. per week for each pig; grass, 2d.; attention of man, 1d.; total cost, 1s. 3., leaving a profit of 1s. per week on each pig when pork was at 6d. per lb.; it was now 7d. One man attended well to from 200 to 250 pigs; he was an Irishman, for few Englishmen liked the job sufficiently well to take an interest in the pigs, and carelessness on the part of the man materially decreased the profit. He kept the store sows when in pig the same as the other stores. They ran about in a field till a fortnight before pigging, when he placed them in a covered shed, so constructed as to admit as much sun as possible. Young pigs kept in the manner described were always nearly fat enough for porkers, and did not require

more than two or three weeks feeding on meal. It was time enough to begin to feed pigs for bacon at 8 or 10 months old. Good breeding sows he allowed to have two farrows, and sometimes three, but never more, and then feed them for bacon, supplying their places with young sows. In selling store pigs he charged a certain price per lb., allowed the purchaser to pick the pigs from the field, which plan always gave satisfaction, and secured a return of custom. It was desirable in breeding animals to have as little bone as possible in proportion to flesh. He had tested a cut sow of his breed, about 30 months old, which weighed 32 score, and the whole of the bones, after the flesh had been boiled from them, only weighed 21 lbs.: so that for every pound of bone there were 32 lbs. of meat, which he believed to be a fair average of his breed. His pigs made 2 lbs. of flesh for every 4 lbs. of good Indian corn, barley, or peameal; as a rule, he preferred the Indian corn. He considered it always to be more profitable to feed upon good food than upon inferior. As a rule, pigs would thrive better for being turned out once a day, except in wet weather, and they would also be healthier, more active, have a cleaner appearance, would possess a great advantage in the show-yard over heavy, ungainly pigs, which could not move about to show themselves. One of the greatest pleasures which his breeding afforded him was to see the number of labouring men who came to buy from him, and he hoped to see the time when every labouring man would have a good pig in his sty.

### III Effects of Bad Corn.

A very curious and important paper appeared in the *Veterinarian* for February, 1862, which is highly worthy the attention of our readers, not only as a record of some very interesting facts, but as holding out a serious warning against the false economy of using bad corn as food. Mr. Mitchell, of Leeds, the gentleman who first called attention to the matter, has kindly promised to supply us with specimens of the corn in question, but in consequence of severe illness he has not at present been able to fulfil his promise. As the subject of such immediate interest, however, we have determined to reserve for future remark anything that may be presented by the specimens on their arrival, and to present the facts as they are presented to us in Professor Varnell's paper.

In a letter dated August 27, 1861, Mr. Mitchell states that a gentleman in his neighbourhood had lost six horses in a very sudden manner. A *post mortem* examination convinced some of the most eminent veterinary surgeons in the surrounding district that their death was due to poison; but an analysis of the intestines or their contents, as well as of the food which they had eaten, failed to show the presence of

any mineral poison, or of any appreciable deleterious organic substance. Three feeds, however, of the oats which formed the principal part of their food were administered to a horse by way of experiment, and death rapidly ensued.

At the same time, an old though healthy mare was purchased and placed in the same box, but fed on food obtained from a different source, and after a week, as she was still in good health, she was removed. A second experiment, however, was made with a pony, which was placed in a stable, at several hundred yards distance, and after three feeds with the suspected oats he was found dead, having eaten only a part of the third feed.

It was pretty clear, therefore, that the oats were the cause of mischief, but whether the evil proceeded from the oats themselves, or from any vegetable poison mixed with the oats, was doubtful. It was determined, therefore, to consult the best authorities in London, and an ample supply of the oats was forwarded for the sake of experiment as well as of analysis.

Accordingly, on the 10th September, 1861, a brown mare was procured by the college for the purpose of testing the oats. She did not fail quite so soon as in the two preceding experiments, but on the third day her hinder extremities became partially paralysed, and on the fifth she died. The oats were again analysed in London, and showed no traces of any known mineral or vegetable poison; but from the whole history of the case it seemed certain that the evil, whatever it was, was intimately connected with the oats themselves.

On a closer examination of the corn, apart from any chemical investigation, it was observed first, that it was musty and of a bad quality. It is not stated whether it was the produce of the previous rainy season, but in all probability such was the case. Many of the grains were then found to be matted together in lumps by a thready, cobweb-like substance.\* The greater part were covered with a black smutty matter, and the grain decomposed, the fecula being replaced by a blackish gray substance, which often projected beyond the surface. On examination this was found to consist of one or more species of mould. The examiner referred what he saw to the genus *Aspergillus*, but it is clear from the figures that there was certainly some species of *Ascochyra* as well, and probably the common *Penicillium* was also present.

Without the opportunity of personal examination, we are unable to say whether any spe-

cies of *Ustilago* had a part in the matter, but it is not probable that this was the case, as the spores of the *Ustilago* of the oat are easily blown away by the wind. The effects therefore produced by *Ustilago hypodytes*, as reported by Mr. Edwin Sidney, or of the large *Ustilago* of the reed, whose evil properties were first made known by Mr. Marshall of Ely, are not so much to the point as those which relate to the occasional effects produced by mouldy provisions strongly resembling those which presented themselves in the cases before us.

Professor Barnett, in his "Outlines of Botany," gives an account of the supposed deleterious effects of bread and animal provision when extensively covered with mould. A substance called Italian cheese, made of fragments of pork, strongly seasoned and converted into a sort of pie, is much used in some parts of the continent. This substance when mouldy has in many cases proved fatal. Dr. Paulus, of Saltz, records three deaths out of seven persons who were attacked with dangerous symptoms after partaking of such food; and many other cases are reported by other observers.

Mouldy bread and flour are also sometimes productive of similar evil. A case occurred at Hammersmith, about 1831, in which a family suffered from the use of some bread which was covered with a yellow mould. The bread, however, was itself of bad quality, the mould having appeared the very day the bread was baked. On analysis no poison was found, but the same bread when administered to a cat and dog was equally deleterious.

A question, however, arose whether the poison was in the food itself, or in the mould. Five grains of the mould, carefully separated from the bread, therefore, were administered and produced no bad effect, though a small piece of the bread from which the mould had been scraped produced colicky pains and a tendency to diarrhoea. To test the matter more closely, a quantity of dough was allowed to become mouldy in a damp place, and when the mould was carefully removed, it was made into a small loaf and baked, and the loaf thus formed had precisely the same poisonous properties as the Hammersmith bread, while the mould itself was eaten by a cat and dog with perfect impunity.

The subject attracted great notice in Paris some years ago, from the barrack bread becoming covered with a bright red mould almost as soon as was baked, due to the species of *Penicillium*, *P. sitophilum*, but we are not aware that it led to any positive results as to the deleterious effects of the fungus.\*

\* Wheat of 1860, which was in general in a very bad condition, exhibited frequently a curious appearance when stored up in large quantities. If the surface wheat was removed gently, the subjacent grain was found to form more or less solid pyramids of different heights, which were found on examination to arise from the grains being bound together by threads spun by a little mite. The wheat from these pyramids was extremely clammy when handled, and had a peculiar smell. In this case no mould was present, but it is possible that the oats in question might have been mity as well as mouldy.

\* The mould, it should be observed, was not confined to the bread in this instance, but was found equally on the wheat and flower of which it was made. The heat to which the fungus spores are exposed in the process of baking is not fatal to their vegetation, and accordingly almost before the bread was cold, the fungus began to grow in the inside of the loaves, which soon became a bright pink or salmon colour. The particular species of mould had not been previously observed by mycologists.



On the whole, then, it may perhaps appear doubtful whether the mould in the cases quoted above was the real cause of mischief, so much as the decomposition which the several substances had undergone, though it must be remembered that in such cases it is absolutely impossible to separate the parasite completely from the matrix on which it grows, the spawn or mycelium penetrating in every direction, and perhaps being equal in quantity to the threads which appear externally.

It is not necessary for us to enter into the peculiar symptoms presented by the several horses. It is sufficient to state that they were upon the whole such as would be caused by the administration of a narcotic-irritant poison, like that of fungi. Whether, however, the ill effects produced were due to decomposition of the oats themselves, or to the mould which grew upon them, the lesson is precisely the same, namely, to give a caution against the use generally of bad food. Mouldy hay and mouldy grain alike are sure in the end to be the dearest.\*

Should we be fortunate enough to obtain a sample, attention shall be paid to this and other matters arising from the question, which even in its present imperfect form can scarcely fail to be interesting.—M. J. B., in *Gardener's Chronicle*.

### Progress of Wages in Scotland and in Ireland.

At the monthly meeting of the Statistical Society, held at St. James's Square, London—Edwin Shadwick, Esq., C. B., in the chair—a paper was read by Mr. Frederick Purdy on the rate of agricultural wages in Scotland and Ireland. The writer commenced by referring to a paper on English agricultural wages, read by him in May last, and to the circumstances of the subsequent issue of a parliamentary return for Scotland, and one for Ireland, both modelled upon the English return, and both for the same period—the half year ended at Christmas, 1860. Dividing Scotland into three groups—viz., the northern, containing nine counties, from Shetland to Kincardine, the men's wages were 12s. 2½d. per week on the average; women's, 5s. 1½d.; and children's (under 16), 4s. That the men's average earnings by task-work were 13s. 6½. In three of the counties, men's harvest wages were 14s., 15s., and 19s. respectively. The midland group embraces nine counties, beginning with Forfar and ending with Bute. Here the men's wages were 13s. 2d.; the women's, 5s. 7d.; and children's 4s. The task-

work wages of the men 14s. 8d. a week. The southern group contained the thirteen remaining counties. The men's, women's, and children's wages were 13s. 2d. 6s., and 4s. 9d. respectively; the task-work wages, 15s. 3d. In some of the midland districts the harvest wages were very high, as, in Dumbarton, 21s.; Forfar, 25s.; and 26s. 6d. in Perthshire.

The statistics of the cost of the food consumed, and of the clothes worn by the Scotch peasantry, both in the present and the former times, were next treated of by the writer, with a view to illustrate the command which the money wages at the respective periods gave the labourer over the articles of his consumption.

The Irish returns were discussed under each province. In Ulster, the wages of the men during the half year averaged 7s. 3½d. per week; the women, 4s.; and the children, all the latter being less than 16 years of age, 3s. 2d. It was noticed that in Ireland the wages of one woman and of one child were together generally equal to those of one man; but that in Scotland the men's wages were considerably above the remuneration obtained by a woman and a child together. The task-work earnings of men in Ulster were 9s. 4d. a week. The Co. naught men had 7s.; the women, 3s. 1½d.; and children, 3s. 1d.; men's task-work, 8s. 10½d. In Leinster, men obtained 7s.; women 3s. 9d.; and children, 2s. 9d.; the task-work earnings of the men, 9s. 9d. Finally, in Munster, the men were paid 7s. 2½d.; the women, 4s. 3d.; and the children 3s.; the task work earnings of the men, 9s. 2d.

It appeared that taking the wages of the agricultural labourer as unity, the weaver was paid 1½, the shoemaker 2, the tailor 2, and the baker 2½, the carpenter 2½, and the bricklayer and mason 3 times as much at the same time and the same districts throughout Ireland.

The paper concluded by bringing the principal facts for the different parts of the United Kingdom together. It was shown that men's wages in England and Wales averaged 11s. 6d.; in Scotland, 12s. 9d.; and in Ireland, 7s. 1d. That in 23 years the rise in the English wages had only been 12 per cent., but that in Scotland, at an interval of twenty years, the rise was 42½ per cent., and in Ireland over 57 per cent. The fact of the low rate of increase in England, as compared with Scotland, was dwelt upon; there were special causes why the rate in Ireland, however gratifying, should not excite surprise. It was strenuously maintained that "the English wages were kept down by two causes—viz., the cruel and impolitic settlement of lands, and the large expenditure for out-door relief. Is it not manifest that when we distribute in England £3,000,000 a year, as untested relief, among the labouring population by the hands of the employers of labour, we place at the disposal of the latter an instrument as powerful as it is pernicious for depressing the fair wages of

\* Headaches are sometimes produced by the clouds of spores which spring up from the mouldy hay when taken in a stack; and the same effect has been observed to arise from the spores of such moulds as the common species of *Penicillium* and *Aspergillus* in other situations, when produced in excessive abundance.

the workman? It is well known that the lowest wages in England were paid in the most pauperised counties. But in Ireland, where there is no out-door relief, the least and the most pauperised provinces are on a par as regards the wages of independent labour; in Ulster, men's wages are 7s. 3½d., and that province has fewest paupers; but in Munster, the most pauperised, the wages are only 1½d. a week less? Taking corresponding districts in England, we find that in Northumberland wages are 14s., while in Dorset they are only 9s. 4d., or 30 per cent. less. Is there any escape from the conclusion?"

The Chairman, in proposing a vote of thanks to Mr. Purdy for his valuable contribution to the industrial statistics of the empire, observed "that there was one very important point of progress in an agricultural and social point of view, especially in Ireland—namely, the advance of the weekly wages beyond the money power of cottier labour and proprietary. In a textbook on agriculture by Mr. E. Murphy, the Professor of Agriculture at Queen's College, Cork, he sets down eight acres as the quantity of land workable at high culture by a farmer and his family, and that by the employment of a degree of skill not always found in large farms the money result obtainable by the labour of his family, and that, too, if they had no casualties, was £23 per annum, or say 8s. 10d. per week, or 1s. 3d. per diem, exclusive of milk and potatoes. Milk and potatoes were frequently given, plus the money wages stated in the statistics. But the average wages of the family, for man, woman, and child, had now risen to 14s. 5d. weekly on the average in Ireland, whilst in Scotland the family wages had got to 23s. 11d. weekly. The money power of these wages was greater than Burns' cottier or small farmer could get; more than Burns himself could have got. The wage family might feed better than he could on the produce of his small farm."

### Sea-weed as a Manure.

The utilization of waste products has occupied much attention of late years, both among manufacturers and agriculturists, and there can be no reasonable doubt but both these great classes of human industry will continue to reap many advantages by steadily pursuing a course of investigation in this direction. Sea-weed, of course, is only available in its crude form as a manure in places near the coast, so that by far the larger portion of Canada is precluded benefitting from this source. Sea-weed is extensively used as a manure along the coast of the New England States, and it might also be

in some situations on the Gulf and Lower St. Lawrence. In a recent number of the *Farmer's Magazine*, [English], we meet with the following observations:—

"The utilization of a common waste substance was recently brought before the public, in an admirable paper read before the Society of Arts by Mr. Stamford, on the useful application of sea-weed. From an elaborate chemical experiment which he had carried out, and a personal examination of the Scottish and Irish kelp works, he produced facts tending to show the great importance of this subject, and how much might be made of it in a commercial and agricultural point of view. It is not necessary that we should follow him into the chemical inquiry and the manufacturing processes and results, by which he proceeds to show how much may be done to add to the various commercial products obtained from sea-weed. Our business lies with the agricultural phase of the question, and how we may be able to diffuse some information of importance to many who have hitherto neglected, or else not duly appreciated, the rich stores which nature has so bountifully placed within their reach. In England generally sea-weed is little valued by agriculturists as an actual fertilizer, and appears to be regarded rather as an economical and useful covering to protect turnips and other roots from winter frosts. Farmers object to its bulk and expensive carriage—particularly now so many portable artificial manures are offered for sale, and recommended so strongly by their manufacturers as possessing great fertilizing value in a small compass. Mr. Stamford speaks strongly upon this. "There can be no question," he observes, "that many of these are worthless rubbish, and perfectly useless, except to line the pockets of the vendor; and the farmer would do well to turn his attention to the composition of sea-weed ash, which really does contain all the constituents of a good manure in a small compass." The ash from the charcoal, in making kelp, usually contains over 20 per cent. of earthy phosphates, the proportion being about that in Peruvian guano; and if the crude ammoniacal salt obtained by distillation were added, in the proportion of about 40 per cent., a manure would be obtained worth from £10 to £12 per ton, of which from 3 to 4 cwt. would be sufficient for an acre of land. The phosphate of magnesia it contains points to its special application to beet-root and clover—Mixed with about 5 per cent. of the chlorides of potassium and sodium, it would be equally beneficial to other root and cereal crops. Liebig divides crops according to their wants into three classes—potash plants, lime plants, and silica plants; such a manure contains the food for all or either of these.

The value of sea weed as a manure is most



appreciated in the channel Islands. Many of the agriculturists there use no other manure. The best drift-weeds appear to be torn up from the Atlantic, as they are found chiefly on the western coasts in Guernsey and Jersey. It is computed that about 30,000 loads of weed are annually obtained from the rocks and bays of Guernsey and the adjacent small island of Herm, valued at 2s. per load. The quantity collected at Jersey is fully as much. A great deal of drift-weed finds its way up the channel, and is washed in and out of the numerous harbours, and thrown on the flat coasts. Many thousands of tons of sea-weed are deposited annually on the coast of Sussex, but a small portion of which is utilized. The agricultural produce of the Isle of Thanet is said to have been tripled by the use of this manure, and the farms on the Lothian coast let for 20s. or 30s. more rent per acre where the tenants have a right of way to the sea-coast, where the weed is thrown ashore. Drift-weed is largely used in Ireland as the only manure for the potato crop, which requires a considerable supply of potash. The residual sea-weed ash from the iodine factories in France is highly valued as a manure, and constantly carried a distance of thirty miles from the factory. The agriculture in the western islands is also enriched by this manure, and some of the tangle is brought into Oban by fishermen, in boats, and sold at 1s. per load. On the south-east coast of Fife, it is laid on the stubble at the rate of 20 cart-loads an acre, and ploughed in; the clover crop never fails, and this is a crop requiring much phosphate of magnesia, an important constituent of sea-weed ash. In the Isle of Lewis 20 tons of sea-weed is considered ample for a Scotch acre. The meride algæ are valuable because the salts contained in them destroy foul weeds, hence cultivated fields on the sea coast are almost free from those noxious plants that infest the lands of the interior.—Sea-weed is used extensively for manure on the Cornish coast, particularly near Penzance, for the growth of early potatoes, and the land in consequence brings almost fabulous prices.

Great Britain alone, exclusive of Ireland and the Scottish isles, possesses a coast line of seven thousand miles, and it is assumed by some that sea-weed might be collected to an average of 3,000 tons per mile per annum. And yet out of this large natural supply but a very small proportion is collected and utilized. In its most prosperous days kelp was never manufactured to a greater extent in the United Kingdom than 28,000 tons per annum—an amount which would require about 560,000 tons of sea-weed. But the quantity now used in kelp making in Great Britain is scarcely more than a third of this. And yet the French manufacture nearly three times the quantity of kelp from sea-weed that we do.

In a new work published by H. Platt in 1601,

styled "The New and Admirable Arte of Setting of Corne," the author says: "Sea-kelps and sea-tangle and other sea-weeds are founde by experience to assist both arable and pasture grounds exceedinglie." "There is nothing new under the sun; but we may profit more generally than we do by the information thus given 260 years ago. Opinions will, however, differ as to the utility of sea-weed as a manure: some believe it to be good for one season, others that it is scarcely worth a mile's cartage. There can be little doubt of its utility as a fertilizer when easily obtained, and within a moderate carting distance."

## Agricultural Intelligence.

### Importation of French Merino Sheep.

A very superior flock of French Merino Sheep came over on the steamer *Zimmerman* from the United States, yesterday afternoon. The flock is composed of ten rams, and was imported into Canada by Mr. John D. Patterson, of Westfield, New York State, for the purpose of improving the breed of sheep in this country. The lot were all young sheep, but of very large size, and covered with fine silky wool, between three and four inches in length. Mr. Patterson is one of the most extensive breeders of stock in the Union; and he imported the French Merino Ram from France, which gained the prize of 450 francs at the World's Fair, held at Paris in 1855. Several of the sheep imported yesterday have already been purchased by some of the enterprising farmers in Vaughan and Markham. The others will be on view for several weeks at the Agricultural Implement establishment of Messrs. Patterson Brothers, Richmond Hill. While they were standing in front of the American Hotel yesterday, they were minutely inspected by a large number of citizens and many farmers, all of whom appeared struck with their large size and peculiar appearance, the animals being covered from the nose to the feet with long, compact, and beautiful wool.—*Globe*.

NEW YORK STATE AGRICULTURAL SOCIETY.—Col. B. P. Johnson, Secretary of the Society, has made arrangements to attend the International Exhibition in London, for the purpose of superintending such articles as may be forwarded from the United States. Mr. J. was the Commissioner from the State of New York to the first World's Fair, at London, in 1851, and performed his duties with signal ability, especially in the department of agricultural implements and machines, bringing them to the notice of other nations, and opening to our manufacturers and inventors an extensive and profitable field of business, and introducing improvements which have greatly improved and perfected the agricultural operations of the entire world.—*N. Y. Paper*.

### Hungarian Grass.

Our farmers have now been experimenting with this grass four or five years. Each succeeding season a larger breadth has been grown, and it may now, without doubt, be considered one of the standard crops of the west. Many of the extravagant claims at first urged for it have been laid aside, as have also many of the objections that, later, were brought against it. It is a prolific grass, yielding considerably more per acre than either the prairie or tame grasses, and is superior to the common millet, though not differing materially from it in its nature. Its seed is more oily, and consequently a heavier feed than millet, is a somewhat more vigorous grower, and hence a surer crop. Indeed, so deep rooted is it, that severe drouth does not affect it in the least, and may be sown upon the highest and driest soils without fear of failure. All kinds of stock, cattle, horses, sheep, and hogs are extremely fond of it, and when fed judiciously, we have yet to hear of an instance where any injurious effects have followed its use. Doubtless many horses have been injured, perhaps killed outright by its use, but these cases, to the best of our knowledge, are where the seed has been given immoderately, just as over feeding of any heavy grain will produce disease in animals.

Some have complained of its being an exhausting crop, but we think it has not been found more so than wheat or oats, certainly not more than buckwheat, and, like the latter crop, the ground is left in most excellent condition—light and free from weeds. Corn does well as a succeeding crop.

Hungarian may be sown any time from now to the middle of the month, and if to be cut for hay alone, perhaps the present season a little later. If for hay, sow one-half bushel per acre; if for seed, about one-third of a bushel is sufficient.—*Illinois Prairie Farmer*, June 7.

### Agricultural Productions of Nova Scotia.

Nova Scotia has already become somewhat famous for its apples. The crop is generally sure and large, and sorts which in England require a wall or espallier, will here grow and thrive in the open orchards as standards. In 1860 186,484 bushels of apples were raised in the Province—Annapolis County raising 65,405 bushels. Mr. R. Starr of King's County, and Mr. W. Chesley, of Annapolis County, contributed to the preliminary local exhibition at Halifax no less than 50 varieties of apples raised in their own orchards. The fruit attains an enormous size. A specimen of the "Gloria Mundi" sent to England measured from 15 to 16 inches in circumference. Hardy kinds of grapes, will, in the Western Counties, do well out of doors. During the past year the "Black Hambro" and "White Cluster" ripened in the open

air. The pear—hardy sorts—Plums, Cherries, and Tomatoes do finely—the latter fruit and ripen well in the open air. The Squash and Pumpkin have been grown of 140 and 170 pounds weight. Onions grow well and yield large crops—indeed, this may be said of all kinds of root crops. Specimens sent to England measure 17 inches in circumference. A native potato is found in the woods, which the Indians use as food. Potatoes yield on an average about 230 bushels per acre, and the tuber is less affected by disease than in other countries. In 1860 9,284,864 bushels were raised. Wheat, imperfect cultivation, yields from 25 to 30 bushels per acre—specimens sent to England weigh 62 and 64 lbs. per bushel. Barley is a sure and heavy crop; the Bald Barley will yield about 40 bushels per acre—specimens sent weighing 54 and 56 lbs. per bushel. In the Western Counties Indian Corn proves a most profitable crop, yielding 60 to 66 bushels per acre—specimens sent weigh 60 lbs per bushel. Buckwheat thrives well—specimens sent weighing as much as 56 lbs. per bushel. Garden and Field Seeds, of all kinds, grow remarkably well and produce profitable returns.—*Halifax Journal*.

WOOL EXHIBITION.—There is to be a great wool show under the supervision of the Ohio State Agricultural Society at its annual exhibition to be held at Cleveland, September 15th to 19th, 1862. Competition is open to the world. Wool will be divided into four classes. 1st. Fulling Wools. 2nd. Delaine Wools. 3rd. Cassimere Wools. 4th. Combing Wools. Twenty-five fleeces must be exhibited to entitle exhibitor to a premium. Mr. S. N. Goodale, of Cleveland, will have charge of this department.—*Prairie Farmer*.

### Horticultural.

#### Hamilton Horticultural Society.

[This Report came to hand too late for the last number.]

The first show of the Hamilton Horticultural Society, for the season, was held in the Mechanics' Institute, on Saturday, 24th inst, the anniversary of Her Majesty's Birthday. A day which the Society rejoice in celebrating, and in honoring by a production of nature's rarest beauties. The show was an excellent one, an honour to our ambitious city: creditable to the gardeners and their encouraging employer's; gratifying to the citizens who take an interest in the laudable objects of the Society.

The vegetables and fruits were few; but as much as could be expected for the time of the year. The winter apples were good, and



in an excellent state of preservation. Asparagus, Radishes, Lettuces and Rhubarb, good early Cabbage, fall-sown Onions, and early Potatoes very fair. The Floral department was the principal attraction; and on this occasion excelled any of the former at the same time of the year. The Geraniums were well grown, and fully flowered, many of the Foliage Plants rare and excellent. The Fuschias were much admired, particularly the lesser and double varieties. The Calceolarias, Gloxinias, Achimenes, and Green House Plants were much to be commended. The Amateurs made a very creditable appearance. In the collection of Foliage Plants from the Hot Houses of John Brown, Esq., there was a plant of the *Musa Cavendishii*; to this genus belong those universally esteemed fruits, the Banana and Plantain; they are by some called the Indian Bread Trees. Some of the species grow to the height of twenty-five feet, and are rarely cultivated to any extent out of their native tropical climates. The *Cavendishii* is a native of China; its dwarfish habits render it suitable for any plant stove or warm Conservatory, where it may be cultivated with success: its ordinary height is about five feet. Sir Joseph Paxton represents it as a most valuable species. Some authorities maintain that no known plant produces so much nutriment from the same space of ground as the Banana. Of the numerous uses to which it is applied, the following may be mentioned: the tops of young plants are eaten as a delicate vegetable; the fermented juice produces an agreeable wine: and the fruits may be dried and ground into meal, served up raw and stewed. Slices fried are said to be a fine delicacy; and finally the leaves are used for thatching and basket making. Charles Lees, Esq., exhibits in his collection of Green House plants the *Ornithogalum Squilla* (By Linnæus *Scilla Maritima*). It is a native of Sicily, Syria, Greece, Barbary and Spain. The bulbs of the *Ornithogalum Umbellatum* have been eaten from time immemorial by the Persians. They are roasted like Chestnuts, and eaten with oil, vinegar, and pepper by the Italians; and they are thought by some writers to have been the dove's dung which was sold for five pieces of silver during the siege of Samaria, in the reign of Ahab.

## PRIZE LIST.

Achimenes, best six in pots, Thos. Buchanan, gardener to W. P. McLaren, Esq. 2nd do, do; Begonias, best three, William Hill, gardener to John Brown, Esq. Varieties, Marchall, Rex, President V. Vandem Heeke. 2nd, Thos. Buchanan; varieties, Grandis, Marchalli, Madame Wagner. Calceolarias, best four in pots, distinct varieties, William Hill. 2nd, Thomas Buchanan. Best specimen, Thomas Buchanan. 2nd, Robert Murray, gardener to John Young, Esq. Cinerarias, best four in pots, Thomas Buchanan; varieties, Magenta (new), Beauty of Chestnut Park, Mrs. Goodfree, Countess of Rox-

borough; 2nd, R. Murray; 3rd, William Hill. Foliage Plants, best six, William Hill. Varieties, Maranta Teybrina; Croton, tricolor; C. Pictum; Caladium Chantini; Dracaena Terminalis; Cissus discolor. 2nd, Thos. Buchanan. Varieties, Cissus discolor, Dracaena terminalis, Croton Pictum; Caladium tricolor, Dffenbachia picta, Mananta Teybrina. Gloxinia, best six, 1st & 2nd, Thomas Buchanan. Fuschias, best four distinct varieties, William Hill. 2nd, R. Murray; 3rd, William Hill. Double best, three distinct varieties, R. Murray; 2nd, William Hill; 3rd, do, do. Best single specimen, R. Murray; 2nd, William Hill; 3rd, do, do. Geraniums, best four, R. Murray. Varieties, Sir Henry Smith, Elegans, Reine de Belle, Arnold's Virgin Queen; 2nd, Thos. Buchanan. Varieties, Marie, King, Butterfly, Arnold's Virgin Queen, Sir Henry Smith. Best single specimen in this class, R. Murray; 2nd Thos. Buchanan. Fancy Geraniums, best four, William Hill. Varieties, Itolinskii, Cloth of Silver, Jeannie Deans, Morning star; 2nd, R. Murray. Varieties, Miss Allan, Jussieu, Superb, Additta, Itolinskii; 3rd, Wm. Hill. Best single specimen, William Hill; 2nd, R. Murray; 3rd, William Hill. Scarlets or other colors in the class, best four, Thomas Buchanan. Varieties, Beaton's Nosegay, Mons. Martin, Christina, Mrs. Fielding; 2nd, Wm. Hill. Best single specimen, R. Murray; 2nd, William Hill.

Green House plants, best twelve, Thomas Buchanan. Varieties, Vinca Alba, Angelonia gardenieri, Clerodendron fragrans, Vinca rosea, Stephanotis floribunda, Lantana Alba, Erica Ventricosa brivefolio, Hydrangea Nortensis, Calceolaria rugosa, C. Pallidior, Pentas carnea, Calceolaria, D. O'Connell. 2nd, William Hill. Varieties, Pentas carnea, Pentas rosea, Gardenia radicans, Gardenia florida, Allamanda neriifolia, Heya Bella, Polygala oppositifolia, Centradenia rosea, Erica alba, Erica Ventricosa Superba, Erica humalis, Asclepias salicifolia. Best six, R. Murray. Varieties, Asclepias salicifolia, Myrtus belgica Hydrangea nortensis, Calceolaria rugosa, Calceolaria pallidior, Cytisus racemossus. 2nd, William Hill. Varieties, Tollya netrophylla, Cuphea emines, Cyticus racemosus, Cuphea parviflora, Calceolaria rugosa, Erica Beaumontiana.

Ferns, foreign, best six, Thomas Buchanan. Varieties, Pteris agria, Pteris tricolor, Gymnogramma chrysophea, Adiantum pubescens, Lastræ glabella, Asplenium pinucilatam; 2nd, Wm. Hill. Varieties, Gymnogramma peruviana, Pteris Sagittifolia, Todia Pellucida, Asplenium Belangeri, Pteris tricolor, Acrostichum alciocore.

Natives cultivated, best six distinct varieties, Wm. Hill; 2nd, John Freed.

Herbaceous plants, best six Spikes, John Freed.

Native plants cultivated, best six distinct varieties, Wm. Hill; 2nd, Wm. Sanderson.

Pansies, best 12 distinct varieties, Thomas Buchanan; 2nd, William Chapman, gardener to Isaac Buchanan, Esq., M.P.; 3rd do. do.

Roses, best six cut blooms, 1st and 2nd, Thomas Buchanan.

Shrubs, hardy, best six spikes, distinct varieties, John Freed; 2nd, Thomas Buchanan.

Tulips, best 12 distinct varieties, Thomas Buchanan; 2nd, Bruce & Murray; Verbenas, best six in pots, distinct varieties, Thomas Buchanan; best 12 truses, John Freed; 2nd, William Chapman.

Bouquets, best hand, Thomas Buchanan; 2nd, William Chapman; best table, Thomas Buchanan; 2nd, William Hill.

#### AMATEUR CLASS, WITH SMALL GREEN HOUSES.

Green House Plants, best three, George Carlisle, Esq.; 2nd, Charles Lee, Esq.; Geraniums, best three distinct varieties; C. Lee, Esq., Cottage Window Plants, best specimen, Mrs. Sharp.

#### LADIES' FLORAL DEPARTMENTS.

Best Hand and Table Bouquet, Mrs. C. Lee.

#### SPECIAL PRIZES.

By W. P. MacLaren, Esq., Calceolarias, Herbaceous, best six distinct varieties in pots, Wm. Hill.

By D. L. MacNabb, Esq.; Tulips, best 25 distinct varieties, Bruce & Murray.

By M. Murray; best Table Bouquets, William Hill.

By W. Michael; Geraniums, Fancy, best six; William Hill.

By J. H. Greer, Esq.; Ferns, foreign, best six, distinct varieties, Wm. Hill.

By John Freed; Pansies, best three distinct varieties in pots, Thomas Buchanan.

By John Brown, Esq.; Green House Plants, best twelve. Varieties, *Torrenia asiatica*, *Bouvardia linthea*, *Ardisia fructo alba*, *Ardisia crenulata*, *Cleome dilleniana*, *Justicia speciosa*, *Calceolaria rugosa*, *Asclepias salicifolia*, *Ereca tricolor*, *Hydrangea*, *Japonica protensis*, *Euphorbia fulgens*, *Cuphea platycentra*.

By John Brown, Esq.; Foliage Plants, best six, William Hill. Varieties, *Musa*, *Cavendishii*, *Cissus discolor*, *Manantu Zebrina*, *Traacaena terminalis*, *Pavetta borbonica*, *Dieffenbachia maculata*.

By G. L. Reid, Esq.—Fuchsias, best six varieties, not to exceed 5 feet in height, R. Murray.

#### FRUIT DEPARTMENT.

Best twelve apples of one kind, 1st and 2nd, William Chapman. Best and greatest variety of Apples in the best state of preservation, not less than 6 varieties, William Chapman. Cucumbers, best brace, Thomas Kilvington; 2nd, William Hill.

#### SPECIAL PRIZES.

By T. C. Kerr, Esq.—Apples, best twelve, Rhode Island Greening, William Chapman; Baldwin, Charles Depew; Russets, C. Depew.

By William Holton, Esq.—Northern Spy, C. Depew.

By R. Bull, Esq.—Best collection, three of a sort, Thomas Lottridge.

By George Laing—Cucumbers, best brace, William Hill.

#### VEGETABLE DEPARTMENT.

Asparagus, best twelve heads, William Chapman; 2nd, R. Murray; 3rd, Thomas Buchanan.

Cabbage, early, best three heads, Wm. Hill.

Lettuces, best four heads, William Hill.

Onions, seeding, best twelve, fall sown, Thos. Buchanan. Red, best six, of 1861, best state state of preservation, T. Kilvington; 2nd, A. W. Taylor. Yellow, best six, A. W. Taylor.

Parsley, curled, best bunch, A. W. Taylor.

Potatoes, kidney, best 2 quarts, Wm. Taylor.

Radishes, long, best twelve, H. B. Bull, Esq.

Turnip, do, best twelve, A. W. Taylor.

Rhubarb Stalks, best six, John Freed; 2nd, Thomas Kilvington.

Spinach, best peck, A. W. Taylor.

#### SPECIAL PRIZES.

By J. M. Williams, Esq.—Asparagus, best twelve heads, Thomas Buchanan.

By R. Osborne, Esq.—Lettuces, best six, William Hill.

By J. Wilkes, Esq.—Potatoes, kidney, best quart, William Hill.

By James Gay, Sea Kale, best six heads, William Chapman.

By J. M. Williams, Esq.—Spinach, best peck, A. W. Taylor.

By W. Hill, Parsley, curled, best bunch, William Hill.

By H. Shaw—Rhubarb, best six stalks, John Freed.

#### EXTRA BY SOCIETY.

For Indian Onion Plant, *Ornithogalum squilla* and *Caetus*, Charles Lee, Esq.

The Judges, Messrs Fleming and Young of Toronto, and Messrs. Holden and Tackel from St. Catharines, expressed themselves highly pleased, especially with the Foliage Plants and Geraniums.

GEORGE LAING.

Hamilton, 30th May, 1862.

### On the Decay of Orchards.

There is a general complaint in New England, Canada, and the Western States, that old orchards are dying, and that young orchards do not flourish as well as they formerly did. Various causes are assigned for this, and no doubt there is more than one cause for the evil. We are inclined to the belief that the principal cause is the action of borers, for there are undoubtedly more than one species of this scourge. One kind, and the most destructive species, is that which attacks the tree near the ground, and does its mischief by girdling the trunk of the tree (*Supera Bivittata*.) This most gen-



erally commences just at the edge of the ground, where it will be out of sight, and works upward and around the trunk, and is oftentimes never suspected. It is some time doing its mischief, and where it does not completely encircle the tree with its channel, or groove, it (the tree) will live a sort of lingering, feeble life several years, and finally die.

We once set out some trees from a nursery, that had been perforated near the ground by borers. We examined them carefully, and were sure that they had been all got out. The tree grew very well, and bore fruit a year or two, but finally dwindled down and died, in spite of all the care and nursing we could give them. On examining them after death, we could find no apparent cause for their death but the perforations that the borers had made near the collar of the junctions of the trunk and roots before they were transplanted. It had not peeled, and the water and continued moisture getting in caused a gradual but final decay.

We said that there were several species of these borers. Some think that the one mentioned above never meddles with the branches of trees; but there are those that do. We have found at least two kinds doing mischief on or rather in the branches. One kind is rather small and seems to confine its operations between the bark and the wood. We have always found it there. The bark is always black and decayed above its lodgment, but whether the egg that produces it is laid there before the bark has been killed or after, we are not able to say.

There are other branch borers that plunge into the wood and burrow about with a *gimlet* in their heads, that seems to enable them to go anywhere about the limb they want to. We cut off a large limb of an apple tree the other day, that we supposed was killed by the cold weather some winters ago, and found three of these last named fellows in it. From their size and the extent of their galleries we are led to change our belief of the cause of the limb's dying, and attribute it to the borer. It is possible, however, that we are wrong in this, and those we found belong to that kind that operate only in wood already dead and decaying, as there are some such.

The apple tree, like other fruit trees, has its peculiar and specific enemies. We wish that friends Packard and Brackett would make the study of them a specialty for a time, and give us a treatise on apple-tree insects—their habits and their remedy.—*Maine Farmer.*

### Trees and Rain.

The following remarks from a recent number of the American *Agriculturist*, are deserving of the serious attention of the owners of wooded lands:—

"It is plain to every observer, that our coun-

try is now more subject to drouths than it was twenty or thirty years ago. Within the last five years we have suffered in this respect seriously. The loss to the farming community, and through it to the whole population, has been many millions of dollars. If they continue for several years more, in frequent succession, there is a reason to fear that the "hard times" will pass away very slowly. Is there any natural cause of drouths, or are they sent upon us solely as special visitations of Providence for our national sins? We would not speak lightly of such visitations, but we are inclined to think that our sufferings in this particular may be traced chiefly to our own bad management. The wide destruction of our forests doubtless has something to do with the production of drouths, and of these destructive floods or "freshets" which are becoming alarmingly frequent.

If the country is widely denuded of its trees the land is more exposed to the burning rays of the sun, and to the winds which cause a very rapid evaporation. Then, too, forest-trees are so many pumps to suck up moisture from the depths of the earth, and to diffuse it through their leaves into all the surrounding atmosphere. From thence it falls upon the surface of the ground. Perhaps some of our readers have amused themselves with making estimates of the amount of water evaporated from the leaves of a single tree, and then of a large forest, in a single day. To one who has never thought about it, the subject is one of great interest. All readers of history know that many of the rivers and streams of the old world, which once were wide and deep, have now shrunk into much smaller dimensions; from what cause can any one tell, if not the hills and mountains are now almost entirely bereft of trees? Drouths prevail all over the eastern continent, with increasing severity; and scientific and observing men everywhere proclaim that this is owing chiefly to the cause of which we now speak.

Valleys and lowlands, and fertile plains should of course be cleared of trees and devoted to farms and gardens; but at least the rocky hills and mountains should not be shorn of their leafy honours. Let the trees stand sacred from the desolating axe, all along our heights, to break the fury of storms, and to condense and bring down the useful vapours of the clouds upon fields and into our springs and streams. It is high time that the older States of the Union began to move in this matter, either regulating the destruction of our old forests, or encouraging the growth of new. We believe that some wholesome law touching this matter would both secure our posterity a good supply of lumber, and a good degree of exception from drouths.

All that individuals can do in this matter is to preserve their own forest land in just proportion and by underdraining, thus deepening the soil, and giving it a porous spongy character, render the land capable of absorbing and retaining as

large a quantity as possible of the water that falls upon it, instead of allowing a large portion to flow off as is now generally the case. Our State Legislatures might we think with great propriety remit the taxes for 20 years on all land devoted to high forest, (not low woods for charcoal and hoop poles) and tax land which might but does not carry a good growth of high or low woods at the rate of its value would warrant if properly improved.

### Are Cottage and Farm Gardens Cultivated to the best advantage.

It is really astonishing how precious the worldly denizens of the cottage and the farm cling to the use and wont system of preparing the ground for the reception of both vegetables and flowers. All the lecturing of horticultural and agricultural writers will not suffice to drive some of them one peg of their usual routine. If you advise some of them verbally how futile it is, comparatively speaking, to be satisfied with the doing out of a certain quantity of manure year by year, and only digging their ground some eight or nine inches deep, when less manure, and digging or trenching twice the depth, would be more satisfactory in the aggregate, producing culinary examples far more palatable, and not only imparting a sounder constitution to the respective examples of plants, but a more lengthened existence to the flowers that decorate their borders, some gravely aver, in reply, that the system which they have adopted and practised many years has been upon the whole satisfactory; that, with due reference to your ideas, they as yet have seen no cause to modify or revolutionize a system practised by their fathers before them—in a word, they have no inclination of giving ear to such new-fangled notions, probably exchanging certainty for hope. Others again, less arbitrary in their notions, admit that your suggestions and arguments are very feasible, but excuse themselves upon the plea of onerous duties during the day, and further, submit that it has, hitherto, required all their spare time in the evenings to get their seeds into a proper bed at the proper time. In fact, there are no end of excuses where parties are disinclined to try a method novel in their ideas.

It does not require much logic to meet these and such like argument—indeed, they have been combated over and over again. They are the fragments of an obsolete system, and must explode betimes on the age of progress.

Deep digging offers a powerful inducement to the industrious cottager of obtaining by a little extra labour, a larger return with less outlay; and few cottage gardens are so inconveniently large as to preclude the tenant, if he wills, bringing it to the highest point of cultivation.—Manuring alone will not produce a high state of

cultivation, but the whole secret lies in deep trenching. A high state of cultivation depends, in the first place, on the land being properly drained. All the foreign matter you can introduce has a qualified effect until his operation is efficiently performed. Deep digging is the next essential, and it has many collateral advantages. It ameliorates the character and condition of the soil in many ways; it offers the least obstruction to water in its passage down ards, and consequently raises the temperature; it is more thoroughly aerated—more exposed to the action of the atmosphere, which adds powerfully to the nutrition of the growing plant; while, at the same time, the roots revel in the loosened staple in a way unknown to the best examples of land superficially treated; its chemical ingredients, in many instances, are materially reinforced by bringing up the subsoil, and that is of very great importance; it is one of the best means for getting rid of slugs.

If ground be trenched three spits deep in the spring there will be few—very few, indeed—to make their appearance in that quarter, unless there be a plot of grass contiguous, or a strong row of box edging, which holds enough to pollute any quarter of ground in a garden, however large. It is curious that a great number will find their way to the surface on ground that is trenched two spits deep, but a thirty-inch staple will be found a deep enough grave for those troublesome pests to the vegetable creation.

This is an important consideration for all holders of small gardens, ay, and large gardens too, to take into account, especially those who have tenacious soils, rich in alumina, and proportionately backward for generating and assisting the development of crops in the early season. Many of the small seeds when in an embryo state fall a prey to those marauders, and often the blame is attached to the unfortunate vendor. It kills all that it comes in contact with for the time being, but it is impotent in its effects twelve hours after application. Surely, then, deep digging, if it offers so many advantages chemically and physically, with the chances of being less pestered with these devourers of germinated seeds and young fresh plants of the Brassica section to boot, is worthy of the best farmer's, the best gardener's, and the poorest cotager's highest consideration.—JAS. ANDERSON, Meadowbank.  
—*Scottish Farmer*

### Onion Culture in Massachusetts.

The amount of onions raised on the Sea-board of some of the New England States is almost incredible. We saw hundreds of acres while on a tour some years since. Women are extensively employed in the culture, and the crop, although very variable, is often highly remunerative. Vast quantities of onion seed is annually saved, and our market gardeners in Canada greatly prefer it to



that imported from Europe. A Massachusetts correspondent of the *Country Gentleman* under date of May 8th, facetiously remarks :

Free rains—cool nights and mornings, Cultivators are embracing every fair moment to put in their seed. Many a pound of onion seed has been buried alive within a week. Notwithstanding the depredations heretofore made in their crops, still they are planted in hope—or even half a crop of onions pays better than any other crop that can be grown in our fields. No man may expect more than \$20 net income from a field of grass, or \$30 from a field of Indian corn ; but even a moderate growth of onions brings in one hundred *shiners*. Why not, then, go in for that which pays best ? There is no danger of glutting the market. Heretofore, all that have been raised have been readily sold at fair prices.—Onions pay better at fifty cents per bushel, than corn at one dollar, or hay ten dollars per ton ; thus the shrewd calculator will spare no effort in growing onions. They have this merit ; they do no one any harm, and if they make delicate ladies turn up their noses occasionally, it may enable them to show their teeth to better advantage, provided they are not *false* or *rotten*—and if they are, the sooner they learn to amend their ways, the more to their credit will it be.

### Raspberries.

The master seeing his men very busy in doing "nothing," asks the following question, and gets the following answer, "John, what are you doing ?" "Nothing, sir," "William, what are you doing ?" "Please, sir, I was just looking after John." "Very good. Here is March come upon us ; I will see if I can't find better employment for both of you. Get Parke's fork, and go into the Raspberry-bed ; take up the runners, and fork the bed all over : mind there is nothing like deep cultivation !" This is tolerably well obeyed by John and William. Now, I ask any man how he can expect to have a crop of raspberries after this fashion ? Not only are the old roots broken, but the new spongioses are broken also ; and the roots being turned up to sun, and wind, like the ends of skates, of course the crop dwindles away.—Hence a man comes to the absurd conclusion that the garden will not bear strawberries and raspberries. Look at the gardens of England generally, and you will find that, except in wet, dripping summers, there are neither of these fruits. Never disturb the ground at all ; hand-weed, and cover the whole soil with stable litter from the horse, with a little black manure round the stools, and you will have more raspberries than you know what to do with. If the summer is very sultry, give each stool one bucket of water twice a-week. A raspberry, like a woodcock lives by suction. From three to five

canes are enough, and these should be cut down to 3 feet. You will get as much fruit by this height as if you left them eight feet high. In a word, the dormant eyes at the base will break, protect the young canes, and keep off the sun. Mine are strong, and are cut to an average of 2 feet 9 inches. I have only one sort, the Beepot [red,] which with this treatment never fails.—The crop last year was enormous ; but, for want of sun, lacking in flavour. Under proper treatment it cannot be too hot for raspberries and strawberries. Weak liquid manure and Peruvian guano one small handful to a stable bucket of water, will greatly assist. With regard to forking the ground, I must observe that I have not moved mine for the last four or five years. If you do move your ground, instead of your new canes coming up close to the stools, you will have them all over the bed.—The candle will burn at both ends, and in the middle too. Keep all runners down except those close to the stools. The closer the ground is kept down the greater will be your crop.—High manuring upon an undisturbed surface are two main features in growing raspberries and strawberries. No man tears out the stomach and entrails of his horse and pig in order to fatten them ; but this is what a man does when he despoils the roots and rootlets of his plants. I am encouraged to make the above remarks by the numerous letters of thanks, which I have received from your readers, in different counties for my strawberry article. The preparation for raspberries is precisely the same as for strawberries. I think the best distance is a yard from plant to plant, and from row to row. The following raspberries are well spoken of by Mr. Rivers, in his noble catalogue of fruits. Red Antwerp, Yellow Antwerp, Fillbasket Fastoff [red], vulgarly called Falsstaff ; Curhills' Prince of Wales [red], Carter's Prolific [red], I have tried the Red Antwerp and Fastoff : but they bear no comparison for canes and crop to the Beepot, which, I suppose is the same as Kuevett's Giant ; moreover, it never blights. Finally, what a pity it is that John and William should work so hard—first, in doing nothing ; secondly, in doing worse than nothing ; and that men generally who possess so acutely "five senses," should be so lacking in the sixth and best of all, "common sense."—W. F. RADCLIFF, Rushton Rectory.—*Florist and Pomologist*.

### The Dairy.

#### Hints on the Art of Butter-Making.

In order to make pure butter, something is required besides the good breed of cows, the sweet grasses, the soft springs, the rolling lands, the rich milk, the most experienced churners,

and the most improved machinery; the best material may be manufactured into yellow grease instead of butter, unless the process is properly performed. It is a fact too well known to dairy-men, that the butter is not made by agitating the milk—not by the process of churning. Butter already exists in the milk, and the art of separating it from the milk, is that on which the success of the dairy depends. Butter exists in globules so small as to defy the detection of the eye, unaided by the microscope, and the removal of these globules without crushing them, is the delicate and difficult task the dairyman has to do. There is no luxury that comes to the table which is so exquisitely sensitive as butter. If the cow feeds on white clover, the butter has a white clover flavour; if she feeds on cabbages, the butter has the flavour of cabbage; if the butter is kept in the vicinity of the stable, it forthwith becomes tainted with the smell of the stable; if packed away in pine tubs, it catches the taste and odor of the pine. It requires skillful handling or it will certainly be spoiled. If there is too much rubbing in the churn, these fine globules, mashed and crushed against the sides of the churn, will give greasy butter; and if the air is excluded the gases will injure it. What can be done, you inquire to cause the adhesion of the globules without grinding or breaking them. Experienced churners answer the question, when they caution young beginners not to churn too fast; not to heat the milk too much; not not to overdo, &c. They may not it in every instance understand the philosophy of the fact, but they do know the fact, that 'overdoing' make grease and not butter. The seasoning of butter is a matter of taste, and there are a great many persons who imagine that the more salt they put in butter the better it keeps. That is a great mistake. Just enough, and none too much is what is required. Too much will spoil the taste and not save the butter. Without penetrating any deeper at present into the philosophy of butter-making, we will simply add, that a gentle and uniform agitation of the milk will best reward the butter-maker for his pains. The butter should be kept away from all unpleasant odors, and when put down should be packed in white oak tubs. Clean cows, clean stables, sweet pans and churns, and neat and tidy operators, are among the things desired by those who would send pure butter to market.—*Am. Ag.*

## The Poultry Yard.

### What Ails my Fowls?—Hen-Pecked Husbands.

In response to the above question, proposed by A. A. N., in the eleventh number of current volume of *Country Gent.*, we would remark that

in regard to the falling off of the feathers of his fowls, there is not so much of disease as habit, caused as we think, by a morbid appetite, apparently induced in the outset, by the impatience of the fowls under confinement, and possibly for the want of gravel, calcareous matter, and animal food, which they obtain when at liberty, in the way of worms, grubs and insects. That it is habit, is evidenced from the fact that the hens are the aggressors, and are guilty of "hen-pecking" their husbands. We have noticed also that the cocks are the victims; they will stand and suffer the hens to pick not only the feathers from their heads, necks and backs, but even the flesh to the bones, and sip the blood as it drops from the wound; and what is singular, they will stand with their heads down, and suffer themselves to be robbed of their flesh and blood, and be denuded of their feathers without the least resistance! The habit is difficult to cure, and we have known it kept up till some of the individuals of the flock who were made especial victims, were almost entirely denuded of their feathers, and in some cases have even had their entrails torn out. Sometimes a particular fowl shows a more inveterate disposition to eat feathers than the rest of the flock. It is best, if not very valuable, to kill such—at any rate remove them from the others. We have never known fowls when at liberty, to be guilty of this foul habit.

The best prevention or preventives are animal food, broken bones, oyster shells, pulverised charcoal, varieties of grain, pure water, clean, and well-ventilated apartments, with a free range, and we will venture to say you will not be mortified by seeing those ragged, half-denuded rough-looking objects about the premises.

The wants of poultry are very clearly shown by a correspondent of the Boston Journal, in the following amusing sketch: "A most pleasing illustration," says he "of the want of lime, and the effects of its presence, came under my notice on my voyage from South America to sunny France. We had omitted to procure gravel for our poultry, and in a few days after we were at sea the poultry began to droop, and wound up their afflictions with the pip, or as the sailors term it, the scurvy. Their feathers fell from their bodies, and it was perfectly ludicrous to see the numerous unfeathered tribe in the most profound misery, moping away their time in an utter state of nudity. Amusing myself one day, by fishing up gulf weed, which floated in immense fields upon the surface of the ocean, I took from it numerous small crabs about the size of a pea. The poultry with one accord, aroused themselves from their torpor, and seemingly aware of the therapeutic qualities of these interesting animals, partook of them with greater avidity than an invalid ever swallowed the "waters of the springs" After a few hours the excellence of the remedy was apparent; the



cocks began to crow, the hens to strut and look saucy, and in a few days all appeared in quite a holiday suit of feathers, derived from the lime, the constituent part of the crab shells.

M. Sace of Switzerland, gives an account of some experiments in the feeding of domestic fowls. He states—first, that the fowls to which a portion of chalk is given with their food, lay eggs, the shells of which are remarkable for their whiteness. By substituting for chalk a calcareous earth rich in oxide of iron, the shells become of an orange-red colour. Secondly—he informs us that hens fed on barley alone would not lay well, and that they tore each others' feathers. He concludes that this proceeding arose from the desire of the hens for azote food.

New-York, May, 1862. C. N. BEMENT.  
(Country Gentleman)

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Diseases of Bone—Splints.

Bones constitute the skeleton and are for the purpose of giving support to the body, protecting various delicate organs also for locomotion. It is to the different bones that various muscles are attached, and owing to their acting as levers the different movements are performed.

Bone is covered by a thin fibrous membrane, called the *Periosteum*, which is strong and varies much in thickness, being thickest in those parts least covered by muscle. When this membrane becomes inflamed, lymph, a product of inflammation, is thrown out between the periosteum and the bone, the lymph becomes converted into cartilage, and this again into bone; this when occurring on certain parts is called *Splint*.

Splint is a bony enlargement technically called an *Exostosis*, and the usual situation is below the knee, and between the large and small splint bones; it also occurs on the outside of the leg, especially with horses having the toe somewhat turned in.

Splints are of most common occurrence on young animals, and the reason is that at their period the periosteum is largely supplied with blood, and it more readily takes an inflammation, and the effused products are very abundant, and shew a great tendency to become transformed into osseous structure.

Suppose a young horse is put to fast work on hard roads when the feet are subjected to concussion; the result of this tells on those bones which are most solid and upright, hence splints occur on the shank bones, and generally on the inside.

Splints seldom cause much lameness unless when rapidly deposited. When occurring on both sides of the limb and especially when accompanied by bony enlargements about the pasterns, they indicate weakness, a tendency to

bony growths, and a consequent liability to lameness. When situated close to the knee, splints sometimes produce a great degree of lameness, from interfering with the articulation, in some cases are very difficult to detect, are apt to be overlooked, and may prove a very obstinate lameness.

*Action produced by Splints*.—The animal may walk sound, when trotting he has a drooping gait, and not with the bending of the knee.

*Treatment*.—When inflammation exists, either hot fomentations or cold applications should be used, or if practicable let the horse stand for an hour several times a day, up to the knees in a pool or stream of water, and allow perfect rest for ten days or a fortnight. When heat and tenderness are removed, if lameness still exists, setons are most useful, or, in some cases, the operation of Periosteotomy give instant relief—that is dividing the periosteum.

When splints do not cause lameness they should not be interfered with, as on a well formed leg, and situated low down, they do little harm. Firing and blistering is sometimes had recourse to. A seton, however, is preferable, its effects being more lasting and not so apt to leave a blemish.

### The Brood Mare.

The question has often been discussed as to whether the sire or dam exerts most influence on the produce. We have usually observed these discussions to be conducted under predetermined notions, instead of seeking to unravel facts with a view to arrive at logical conclusions. Breeders of thorough bred horses alone seem fully to understand the real importance of attending to the qualities of both sire and dam, and that until the exercise of judgment and proportionate good fortune favouring, the latter is obtained, the former cannot be availed of. That good weight-carrying horses of mixed breeds have become annually more scarce during the last thirty years, few people will deny, and most men who are interested in the subject are of opinion with ourselves, that one of the chief deteriorating influences has been a want in appreciation of the value of the mare on the part of farmers. The foregoing observations apply especially to the best breeding districts in England, taking, for instance, the East and North Ridings in Yorkshire. Any one who remembers the fine Cleveland bays, the coaching and hunting mares of years gone by, with those of the present time, will acknowledge that these have become scarce in number and inferior in quality as compared with the same class of former times.

We have asserted the want of understanding the real value of the mare has been a primary cause to check improvement, and has produced loss to the country of the best mares—those

adapted to produce carriage horses, hunters and roadsters. Let any one offer what is considered a good price, and the best brood mare in the district is taken away, and the breeder, without any reason, congratulates himself that he has made a good sale, and has turned in ready money, whilst he has, probably a bad, long-legged filly, in no way calculated to become a brood mare, which he none the less keeps to supply the place of the good mare he has sold; this has been of constant occurrence, the mares not being sold from one farmer to another, but to leave the country. Again, of late years mares have been more used in towns than formerly; they have brought better prices in the market: hence another inducement to sell very good animals. There were also some causes between twenty and thirty years ago which led to many farmers parting with their good mares. It was when railways were first established that many took alarm, and believed that horse-breeding would no longer prove remunerative. A little previous to that time, when roads were being macadamized, the streets of London improved, and light carriages substituted for heavy, and the continental dealers became the best buyers—those from Paris especially being amongst the best judges in the market—the old-styled strong class of coach horse was objected to; these men wanted good heads, good action, in fact, good horses with breed. This new demand on the part of the dealers ready to buy at high prices when they found the horses they wanted, led to a more extensive use of blood stallions with the coaching mares; and had these horses been of the right sort, the result must have been good; but for the most part, the blood horses were amongst the worst that could be found for that purpose, overgrown, leggy animals, with flat sides and bad feet, and many produced stock that was really no good at all. Reared on rich grazing lands, the young stock from such crosses grew fully as high and more lengthy than the old coach horse, but with a want of power, action, and wearing qualities; simultaneously with the change came a great increase in the number of roasters. It was soon seen that narrow, long-legged horses would not do for work, nor would they sell to pay; but it was not so easy to retrace the steps. The bad colts could be got rid of at one price or another, but the fold-yard and the field became stocked with bad fillies; the wide, good, old-fashioned mares disappeared; it is true there were always a few good ones left, and there are some still, though they are scarce. We wish to show the tenant farmer that it is to his interest to incur a liberal outlay for the best young mare he can find in the country, and then equal good judgment in the selection of a stallion, though he go some distance in search of him, and to continue the process by equally good management of his stock in all seasons. A valuable brood mare to an intelligent farmer is like his richest field, re-

quiring good seed and diligent cultivation, and then, not otherwise, will horse-breeding prove a profitable branch of agriculture.

This subject which has been at other times treated in our pages, we have been induced to notice again at this season, through looking over the columns of *Bell's Life*, in which are so often to be found the names of horses with their merits so set forth and tabulated as to be readily seen at a glance; we have been struck by the perusal of the list of stallions to see that five of the most fashionable of the present day are sons of one mare. We shall comment on this progeny, because it so fully supports all our notions respecting the value of the brood mare, and illustrates what we have said in the foregoing paragraphs. The stallions Stockwell, Rataplan, King Tom, Knight of St. Patrick, and the Knight of Kars are all sons of the Marquis of Exeter's mare Pocahontas; we venture to say that no such example in the value of the produce of one living mare can be adduced. We shall not now multiply this value by adducing the second generation of this extraordinary animal; they are yet young, though one stallion from amongst them, a St. Leger winner, St. Albans, is just advertised to cover at 20 guineas a mare, whilst Kettledrum and others will succeed in due time.

For the instruction of some of our readers, we will give the prices at which these five stallions are advertised to cover: Stockwell at 50 guineas a mare, Rataplan and King Tom at 40 guineas each, and the two last named untied stallions respectively at 30 and 10 guineas each. The horse at the head of this list has had his subscription full for some months past, and no doubt the next two have their allotted number before now. If we take fifty mares each to be the number put to these five horses, that will give a sum of 8,500 guineas for the season, and this is the more extraordinary when it is taken into account that the oldest of these five stallions was only foaled in 1849; it is too soon yet to look back to Pocahontas, with all the multiplied advantages that her produce will represent ten or twenty years hence. We know of no other mare that has produced such a number of young stallions to begin with.

Comparisons, however are not the means by which we seek to deduce important conclusions from this notice: we could adduce an indefinite number of instances where the highest class blood mare has added to the wealth of a rich man, and not a few in which the useful mare, well managed, has greatly improved the condition and status of the farmer, all going to prove that the English horse-breeder should act like the Arab over his mare, when he really possesses a good one: by no means lightly part with her, as the opportunity does not occur very often, even when judgment and money are available, to find good brood mares of any distinct class; besides, we do not know what they will prove to



be until tried. Hence the increased value of a tried good stallion over an untried one, and of the mare whose produce has proved winners, or realized high prices in the market, over that of a casualty one.—*Edinburgh Veterinary Review.*

### Mortality amongst Ewes.

In the earlier districts of England and the South of Scotland, the lambing has generally progressed very favourably; a large crop of lambs is reported, and in some flocks an unusual predomance of twins is spoken of. One gentleman is surprised by beginning a prolific season with 17 lots of twins, and a triplet. The abundance of keep has told favourably on the condition both of the ewe and lamb, and neither mother nor offspring have yet suffered materially from the provoking continuance of the unexampled wet. But to some farmers the wealth of winter keep has not been altogether for good, and we learn that the ewes in some quarters have been ailing several weeks before lambing, and dying apparently from some fulness of blood." We have recently heard of several such cases occurring on some of the rich lands of the midland counties of England, and append an interesting letter from a correspondent who has suffered, in the same way near the good old city of York:—

In this neighbourhood the mortality among our flocks of breeding ewes is unusually great, but what has induced the sickness which in so many cases proves fatal seems difficult to ascertain. Owing to the turnip crop being remarkably good, ewes have never been better kept; by far the greater number of them having been eating turnips on the arable land, *ad libitum*, and are therefore in as good condition as can be desired. We generally remove them to the grass fields two or three weeks before lambing, and give swedes with a moderate allowance of oats to produce a good flow of milk, and it is at this critical period that disease of a fatal kind has made its appearance. The first symptoms are—giddiness somewhat resembling the sturdy, a staggering gait, followed by dulness, refusal of food, and a complete prostration of strength, so that if the animals are compelled to rise on their legs, they walk feebly for a few steps, and lie down as soon as possible. It is certainly strange that young fresh ewes in good condition should succumb to disease before lambing, especially as the pastures are in a very forward state for the season of the year. We might be led to conclude the cause had been in operation for a considerable time. A few years ago my next neighbour's ewes were similarly affected. If they were roused up when laid down they stared wildly about, staggered backward and fell: as might be expected they lambed without milk, and died along with their sickly offspring.

I must not omit to state that the weather during the last three weeks has been very wet, so that the ground is thoroughly saturated. Will you be kind enough to inform me in your next week's paper what system of management may at once be adopted, and how the sickly ewes should be treated after disease has shown itself.

The excellence of the winter keep, the early luxuriance of the grass, and the liberal extra feeding, have, doubtless, conspired to produce a condition of plethora, in which the symptoms described appear to depend. We last summer met with several cases amongst cows of a character very analogous to those described by our correspondent. The animals were four and five years old, in high condition, and fed on clover, with vetches and some bean flour given at night when the cattle were driven into a yard. Three weeks or a month before calving they became restless and stupid, neglected their food, were feverish and unsteady on their legs, and several died rather suddenly and after only a day's illness. But it is certainly seldom that such overfulness of blood does harm either to cows or ewes before parturition. After that event, however, it frequently causes much mischief, producing especially the apoplectic and very fatal form of puerperal fever. Within a month or six weeks after lambing, when the thriving lambs begin to get strong, and the spring grass is fresh and plentiful, the milk is apt to become so rich and abundant that the lambs appear to thrive too rapidly, take diarrhoea, and die in numbers. Many rich grass lands are on this account unsuitable for ewes and young lambs.

To arrest the disorder will possibly be found somewhat difficult. The grass fields selected for the ewes, when they are removed from the turnips, should be as dry as it is possible to find in this wet season; whilst the herbage ought not to be too luxuriant. It will conduce to health if they have to roam a little for their food. The Swedes should be given only in moderate amount, and the oats may be discontinued until after lambing. With the excellent condition of the ewes, there is little fear of shortness of milk. If afterwards found deficient, a little oilcake mixed with bran will be useful, and is preferable to the oats, which sometimes produce, in sheep unaccustomed to them, disordered stomach and constipation. Salt should be provided in covered troughs, and a little nitre, which may be conveniently given mixed with bran, will also be advisable, care being taken that individual sheep do not take more than their own share. An ounce will suffice for eight sheep, and the medicated mash may be safely enough continued for a week or ten days without much risk of its acting unduly on the kidneys.

The treatment of the disease when once developed will prove, we fear, rather unsatisfactory, for sheep always make indifferent patients, and ewes heavy in lamb are especially difficult to

doctor, and can stand neither much medicine nor any rough handling. Purgative medicine, with a laxative diet, and an occasional dose of nitre will constitute the appropriate remedies. A moderate and early bleeding may also be advisable, but will have the serious disadvantage of being apt to bring on parturition. For both prevention and cure the great matter is to keep up if possible the action of the several excretory channels—the bowels, the skin, and the kidneys, and to promote a healthy state of the body by moderate and judicious feeding.—*The Veterinarian*.

## Miscellaneous.

### Curious Phenomenon.

"How is it that you raise such large and nice onions?" I asked of an Iowa farmer, as I was sitting at table with him, and observing some on the table.

"Well," said he, "we sprout the seed with boiling water, and then plant it early and in good ground."

"Sprout the seed in boiling water?" I exclaimed, inquiringly. "What do you mean, sir, by that? Won't boiling water kill the seed?"

"Not at all," he replied; "but it will sprout them, in one minute's time."

"It will? It looks incredible," I replied with surprise.

"Well, you try it," he replied, "when the time comes to plant, and you'll find it just as I tell you."

And sure enough, when spring came, and my neighbour was planting his onion seed, being present, I said:

"Jewell, last winter there was a man in Iowa told me that to pour boiling water on black onion seed would sprout it in one minute. Suppose you try it?"

"Very well," said he. And taking the tea-kettle from the stove, he poured the boiling water on the seed, which he had in a saucer. Looking closely at it for a moment, exclaimed, "You have told rightly. Only look there."

I looked, and behold, the little sprouts about as large as horse hairs were shooting out of the opened ends of the seeds! He did not retain the water on the seed above three seconds, and in less than one-half minute after it was poured off, the sprouts were projecting from the seeds.

My Iowa friend assured me that this process would advance the growth of the onion two or three weeks beyond the ordinary method of planting without sprouting.—*New England Farmer*.

**PARRAFINE.**—How wonderful to trace the circulation of matter in nature, even in such an apparently simple thing as a burning candle!

Parrafine has existed in other forms for millions of years, perchance in the rain and the atmosphere which fostered the tree and the shrub, and the tender flower, flourishing in worlds now passed away. Vegetation seemed to perish, and leave no trace behind; but nature, ever working, was storing the relics, to accumulate them in the exhaustless coal beds, destined to illumine the inhabitants of the worlds to be. And now, as the taper grows smaller and smaller, who can tell what part those products of its combustion will have to play in the economy of the universe? They are not lost, but will enter once more into the foliage of the future, as the same products entered into the dim, mysterious past. Thus by an eternal round, parrafine may produce parrafine, as a grain of wheat produces a grain of wheat.—*Mechanic's Magazine*.

**THE DEEPEST "DUG" WELL IN THE WORLD.**—A clever lecture by Mr. Henry Catt, tells us that the Warren Farm well is not an artesian, having been dug, not bored. The scientific facts he says, learned from this great work are—that the upper green sand has no existence in this locality; that the gault is double its usual thickness; that Mr. Martin, of Pulborough, is right in saying that gault should be classed with chalk and, lastly, that digging is better than boring a well. The upper chalk extends 418 ft.; the grey marl, 155 ft.; blue marl, 173 ft.; firestone, 8 ft.; gault, 282 ft.; ditto, with green sand, 25 ft.; clay, 5 ft.; green sand, 5 ft., ferruginous beneath; from which we may deduct 10 per cent for the dip. In the strata pierced fossil oysters and ordinary gault fossils were found; also fossil wood perforated by the toredo, in some cases having the cavities filled with bisulphate of Iron. He believed the water came from Ditching Common. Mr. Hollis said that the artesian wells at the County Lunatic Asylum, at Hayward's Heath, was nearly 900 feet deep, and its supply derived from the ferruginous strata. The water was very wholesome, and the supply so abundant that, after they had pumped out 40,000 gallons, it hardly lowered the level one inch.—*Sussex Express, England*.

**THE ALPACA WOOL.**—The shearing of the alpacas which was in process at the time we published our last summary, has recently been completed, and we are happy to state that the result is considered very satisfactory. The number of animals shorn was 306, and the total amount produced was 24 cwt., making an average of 8½ lb per fleece. Besides the above the flock includes a number of last years lambs; none of these were shorn, their fleece being too short. By far the large portion of the wool was obtained from animals born in the colony, and the fleeces are consequently those of Australian alpacas, this being the first regular shearing that has taken place. The sample is pronounced a very fine one; and a great improve-



ment upon the former clip. The wool will shortly be shipped, and it will be a matter of interest to learn how much the first large parcel of Australian alpaca will realize in the English market.—*Sydney Morning Herald* Feb. 19, '62.

**THE POET LAUREATE AND THE LATE PRINCE CONSORT.**—It is stated that Mr. Alfred Tennyson has received from the Princess Alice a most touching autograph letter, written by command of her Majesty, expressing the intense pleasure and consolation which the Queen has derived from the dedication prefixed by the Laureate to the new edition of his "Idylls of the King"—a work which was an especial favourite with the late Prince Consort. The following is the dedication referred to:—

"These to his memory,—since he held them dear,  
"Perchance as finding there unconsciously  
"Some image of himself—I dedicate,  
"I dedicate, I consecrate with tears—  
"These Idylls.

"And indeed he seems to me  
"Scarce other than my own ideal knight,  
"Who revered his conscience as his king;  
"Whose glory was redressing human wrong;  
"Who spake no slander, no, nor listened to it;  
"Who loved one only, and who claved to her—  
"Her—over all whose realms to their last isle,  
"Commingled with the gloom of imminent war,  
"The shadow of his loss moved like eclipse,  
"Darkening the world. We have lost him; he is gone;  
"We know him now; all narrow jealousies  
"Are silent; and we see him as he moved,  
"How modest, kindly, all accomplish'd, wise,  
"With what sublime repression of himself.  
"And in what limits, and how tenderly;  
"Not swaying to this faction or to that;  
"Not making his high place the lawless perch  
"Of wing'd ambitions, nor a vantage-ground  
"For pleasure; but thro' all this tract of years  
"Wearing the white flower of a blameless life.  
"Before a thousand peering littlenesses,  
"In that fierce light which beats upon a throne,  
"And blackens every blot: for where is he,  
"Who dares foreshadow for an only son  
"A lovelier life, a more unstain'd than his?  
"Or how should England dreaming of his sons  
"Hope more for these than some inheritance  
"Of such a life, a heart, a mind as thine,  
"Thou noble Father of her Kings to be,  
"Laborious for her people and her poor—  
"Voice in the rich dawn of an ampler day—  
"Far-sighted summoner of war and waste  
"To fruitful strifes and rivalries of peace—  
"Sweet nature gilded by the gracious gleam  
"Of letters, dear to Science, dear to Art,  
"Dear to thy land and ours, a Prince indeed,  
"Beyond all titles, and a household name,  
"Hereafter, through all times, Albert the Good.

"Break not, O woman's heart, but still endure;  
"Break not, for thou art Royal, but endure,  
"Remembering all the beauty of that star  
"Which shone so close beside thee, that ye made  
"One light together, but has past and left  
"The crown a lonely splendour.

"May all love,  
"His love, unseen but felt, o'ershadow thee;  
"The love of all thy sons encompass thee,  
"The love of all thy daughters cherish thee,  
"The love of all thy people comfort thee,  
"Till God's love set thee at his side again."

**OLD CUSTOMS IN CONNECTION WITH THE APPLE TREE.**—In Sussex, England, the blessing of the apple tree is still observed. On the eve of Christmas day, young and old people assemble in the orchard and commence dancing round a large apple tree, repeating a rude chant to words

of this purpose:—"God bless this tree to the use of the master. May it flourish and bring forth abundantly, even to fill a hat, to fill a basket, to fill a cart, to fill a waggon." The same ceremony is performed round every apple tree and pear tree in the orchard. In Devonshire, a certain apple tree, as a representative of the rest, is sprinkled with cider, or a bowl of it is dashed against the tree, or cakes steeped in cider are hung upon the branches, followed by an incantation, and a dance round the tree, and then home to feast.

**BE CHEERFUL AT YOUR MEALS.**—The benefit derived from food taken, depends very much upon the body while eating. If taken in moody, cross or d spairing condition of the mind, digestion is much less perfect and slower, than when taken with a cheerful disposition. The very rapid silent manner too common among Americans, should be avoided, and some topic of interest introduced at meals, that all may partake in, and if a hearty laugh is occasio nly indulged in, it will be all the better. It is not uncommon, that a person dining in pleasant and social company, can eat and digest well that which when eaten alone, and the mind absorbed in some deep study or brooding over cares and disappointments, would lie long undigested in the stomach, causing disarrangement and pain, and if much indulged in, become the cause of permanent and irreparable injury to the system.

**HOW TO TEACH A PARROT TO TALK.**—In order to teach a parrot to imitate sounds, the best and the simplest mode is to take the bird into a perfectly quiet room, where it can hear and see no one but the instructor, and will not have its attention distracted by surrounding objects. Then, after taking every care to render the feathered pet familiar, speak the words, or produce the sounds, which the bird is required to imitate, and be careful to avoid varying them even by the fraction of a tone. You will soon see the pupil taking notice of the oft-repeated sound, and it will presently hold its head aside, as if to catch the tones more clearly. After a while it will try to imitate them; and as soon as it makes an attempt, however imperfect, make much of the bird, and give it a small morsel of some special dainty.—*Every Boy's Magazine*.

**INGREDIENTS OF WHEAT.**—Estimating the yield of wheat at 25 bushels, 60lbs. the bushel, the amount 1,500lbs. carries off 30lbs. of ash; the straw, estimated at 3,000lbs., taking off 180lbs. The 210lbs. of ash carried off per acre by a crop of wheat as above is made up as follows: Potash 25.59lbs., soda 3.02, lime 12.94, magnesia 10.52, oxide of iron 2.55, phosphoric acid 20.56, sulphuric acid 10.56, chlorine 1.97, silica 118.29. In wheat the proportion of grain is 29 per cent., of straw 71.

**HOW TO CURE KICKING HORSES AND RUNAWAYS.**—The experiments of Rarey, the Horse Tamer, and the promulgation of his theory of horse training and management, are bringing before the public much useful knowledge upon this interesting subject. Whatever may help to bring the horse, especially vicious horses, as they are called, more completely under the subjection of man without the necessity of resorting to cruel treatment, ought to be known by all who have the management of equine quadrupeds. We heard a day or two since, a description of the taming of a kicking horse and another who was an inveterate runaway, by methods so simple and Rareyish that we cannot forbear to publish them for the benefit of horseologists in general.

If you have a horse that has a habit, when in harness, of bringing his heels in contact with the dasher and damaging the vehicle by kicking, proceed as follows:

Place around his neck a band like that used for the riding martingale. Then take two light straps, buckle them to the bit on either side, pass them through the neck band and thence inside the girth and strap them securely to each fetlock of the hind feet, taking care to have them of the proper length. When a horse is rigged in this manner if he attempts to "kick up behind," each effort will jerk his head down in such a way as to astonish him, and perhaps throw him, over his head. He will make but a few attempts to kick when he finds his head thus tied to his heels, and two or three lessons will cure him altogether.

The method of reforming a runaway is equally simple and effectual. First of all, fasten some thick pads upon your horse's knees, then buckle a strap, about the size of a rein, upon each fetlock forward, and pass the straps through the hame rings or some part of harness near the shoulder on each side and lead the straps back to the driver's hand as he sits in the buggy. He has thus four reins in hand. Start the animal without fear; don't worry him with a strong pull upon the bit, but talk to him friendly.—When he attempts to run he must of course bend his forward legs. Now pull sharply one of the foot reins, and the effect will be to raise one of his forward feet to his shoulders. He is a three-legged horse now, and when he has gone on in that way a little distance drop the constrained foot and jerk up the other. He can't run faster on three legs than you can ride, and when you have tired him on both sides pretty thoroughly, or if he refuse to take to his trot kindly and to obey your voice and a moderate pull on the bit, you can raise his fore feet, drop him upon his knees, and let him make a few bounds in that position. The animal will soon find that he can't run away; that he is completely in your power, and by soothing words you will also be able to convince him that you are his friend.—He will soon obey your commands, and will be

afraid to extend himself for a run. Within a week or two some horses that were quite valuable animals in respect to everything but their bad habits of kicking and running in harness, were cured by methods described above. The experiments are such as can be made by any person at all accustomed to managing horses, and we hope it may prove serviceable to some of our readers.—*Boston Herald.*

**EDUCATED FEET**—Who can tell to what uses the feet and toes could be put, if a necessity arose for a full development of their powers? There is a way of educating the foot, as well as the hand and the eye; and it is astonishing what an educated foot can be made to do. We know that in the time of Alexander, the Indians were taught to draw their bows with their feet, as well as with their hands, and Sir J. E. Tennent tells us that this is done up to the present time by the Rock Veddahs, of Ceylon. And nearly all the savage tribes can turn their toes not only to good, but bad account; like the aboriginals of Australia, who, while they are cunningly diverting your attention with their hands, are busily engaged in committing robberies with their toes, with which they pick up articles as an elephant would with his trunk. So also the Hindoo makes his toes work at the loom, and weaves with them with almost as much dexterity as with his fingers. The Chinese carpenter will hold the bit of wood he is planing by his foot, like a parrot, and will work a grind-stone with his feet. The Banaka tribe, who are the famous canoe-men on the West African coast, will impel their light canoes—weighing only from eight to ten pounds—with great velocity over the waves, and, at the same time, will use the foot to bail out water; and when they would rest their arms, one leg is thrown out on either side of the canoe, and it is propelled with the feet almost as fast as with a paddle. There was also Monsieur Ducornet, who died only four years ago, who, although he was born without hands, was brought up as an artist and who annually exhibited at the Louvre pictures painted by his feet. Then there was Thomas Roberts the armless huntsman to Sir George Barlow whose feet were made to perform the duties of his hands. And there was William Kingstone, who with his toes wrote out his accounts, shaved and dressed himself, saddled and bridled his horse, threw sledge hammers, and fought a stout battle, in which he came off victorious.—*Cuthbert Bede's Glencreggan.*

**PAY OF ARCHITECTS IN THE 17TH CENTURY.**—Long before Brindley's time Inigo Jones was paid only eight shillings and fourpence a day as architect and surveyor of the Whitehall Banqueting House, and forty-six pounds a year for house-rent, clerks, and incidental expenses; whilst Nicholas Stowe, the master mason, was allowed but four and tenpence a-day. When



the Duchess of Marlborough was afterwards engaged in resisting the claims of one of her Blenheim surveyors, she told him indignantly "That Sir Christopher Wren, while employed upon St. Paul's was content to be dragged up to the top of the building three times a-week, in a basket, at the great hazard of his life, for only £200 a-year"—the actual amount of his salary as architect of that magnificent cathedral. Brindley, however, fared worse still, and for a long time does not seem to have risen above mere mechanics' pay, even whilst engaged in constructing the celebrated canal for the Duke of Bridgewater, which laid the foundation of so many gigantic fortunes.—*Smiles' Engineers.*

**DOCTORS' EMOLUMENTS.**—Of the slow promotion in medical ranks, even in the case of the most skilful and deserving, the earnings of Sir Astley Cooper afford a striking example. In the first year he netted five guineas; in the second twenty six pounds; in the third, sixty-four pounds; in the fourth, ninety-six pounds; in the fifth, a hundred pounds; in the sixth, two hundred pounds; in the seventh, four hundred pounds; in the eighth, six hundred and ten pounds; and in the ninth, the year in which he secured his hospital appointment, eleven hundred pounds. The highest amount he ever received in any one year was £21,000; but for many years his average income was over £15,000.

**COLOURS OF ICEBERGS.**—We are off on the gentle rollers of the bay of St. Louis, after a low, broad iceberg, covering say an acre of surface, and grounded in forty fathoms of water. It has upon one extremity a bulky tower of sixty feet, on the other forty, and in the middle a huge pile of ice-blocks of all shapes and sizes, the ruins of some spire. While the outside of this heap of fragments is white with tints of green, touch hear and there with the most delicate bronze and gilding, every crevice where there is a shadow lurking is a blue, the purity and softness of which cannot be described, nor easily imagined. To one who has any feeling for colour, it has a sentiment as sweet as anything in nature. A pure white surface like this fine opaque ice, seen through deep shade, produces blue; and such a blue as one sees in the stainless sky when it is full of warmth and light. It is quite beyond the rarest ultramarine of the painter. The lovely azure appears to pervade and fill the hollows like so much visible atmosphere or smoke. One almost looks to see it float on the crystal cells where it reposes, and thin away into colourless air.—*After Icebergs with a Painter.*

**COSTUME.**—Trousers may have many advantages: they are dusty at the feet in summer, and muddy in winter. They get easily out of shape and baggy at the knees, and much overheats the lower parts of the body, and thus, to some extent, demoralize the individual; while

the practice of wearing unwashable trousers next the skin for six months is a dirty habit. True, if drawers are worn, his inconvenience is avoided; but perhaps impede free motion, press upon the stomach, and drag inconveniently at the braces. The present practice of turned down collars must be a great comfort to those who formerly wore tight cravats and stiff collars; but the student and the cricketer alike throw off the collar and the necktie when much work is to be done; and it seems to me that, for health and elegance, the neck should be as free as possible, and that a narrow shirt-band, fastened with an ornamental button, might be a good substitute for the "turn-downs." Indeed, the turned collars of shirts, coats and waistcoats, form lines which do not harmonize with the square lines of the male figure, and they diminish the apparent width of the shoulders. Beards are natural to man, and it is a violation of nature to use the daily razor; but, at the same time, beards are too natural to harmonize with modern dress. If a committee were formed, consisting of men of taste—sportsmen, artists, soldiers, and physicians—assisted by the practical knowledge of manufacturers and tailors, a costume might be devised at once graceful, comfortable, and economical; and I do not see why, at the forthcoming Great Exhibition, the best manner of clothing the human body should not be thoughtfully considered.—*Dr. Wild, in Builder.*

**STRANGE HABIT OF PARROTS.**—When domesticated, the parrots, macaws, parakeets, and cockatoos show the same partiality for vegetable seeds, and are generally fed very well on hempseed, the skins or husks of which they detach with astonishing skill. Some that receive bones to gnaw acquire a very determined taste for animal substances, and especially for the tendons, ligaments and other less succulent parts. From this kind of feeding, some parrots contract the habit of plucking out their own feathers, that they may suck the stems; and this becomes urgent a want that instances have been known of their stripping their bodies absolutely naked, not leaving a vestige of down wherever the bill could reach. They spared, however, the quills of the wings and tail, the plucking out which would have caused too much pain. M. Dumarest states that the body of one of these birds, belonging to M. Latreille, thus became as a pullet plucked for roasting. Yet the bird supported the vigour of two very severe winters without the slightest alteration of health or appetite. M. Veillot observes that this habit of depilation is produced in many parrots by an itching of the skin, and not in consequence of their being accustomed to eat animal substances.—*Cassell's Natural History.*

**A SUPERSTITION ABOUT THE ASH TREE.**—In the Highlands of Scotland, at the birth of a child, it is said that the nurse takes a branch of

the ash-tree, one end of which she puts into the fire, and, while it is burning, receive into a spoon the sap which oozes from the other end: this she gives to the child to be mingled with its first food. It is supposed to impart wonderful virtue. In King's County, Ireland, near Kenery Church, is a famous ash, the trunk of which is now 21 feet 10 inches in circumference. When a funeral of one of the peasantry passes by this tree, the procession pauses, the body is laid down for a few minutes, while all offer a few words of prayer. Then each person casts a stone to increase the heap which has been accumulated over its roots. This is imagined to benefit both the dead and the living. There is an ancient saying, that "a serpent would rather creep into the fire than over a twig of an ash-tree." Cowley, enumerating various prodigies, says :

"On the wild ash's top, with bats and owls,  
With, all night, ominous and baleful fowls,  
Sate brooding, while the screeching of the doves  
Profaned and violated all the groves."

It is surprising how many of such follies will creep into men's minds.—*The Druggist*.

**AN AGRICULTURAL PASTIME.**—The season has begun for holding jubilees of the Sparrow Clubs, and scarcely a week now will pass on which we shall not be called upon to record the celebration of one or more of these village festivals. We shall be requested to chronicle how Farmer Giles took the chair; Labourer Hodge, the vice; how mine host of the "Toad under the Harrow" supplied a supper in his usual splendid style, utterly regardless of cost; how old Job Lynxeye, tenant farmer, and young Abel Anvil, blacksmith, produced so many thousand heads of small birds, and triumphantly carried off certain sweepstakes provided for the victors; how the night was spent in mellifluous harmony; how the patriotic aviscides passed a most agreeable night, and how they did "not go home till morning." Now, we have serious doubts whether these bird slayers do not do a great deal more harm than good; and we really should be greatly obliged if some experienced person, capable of forming a correct opinion on the matter, would direct his attention to it, and favour us with the result of his inquiries. Our own decided impression is, that it is mischievous folly to destroy indiscriminately all small birds; but we should much like to be favoured with really sound practical information on the subject. Hitherto, our French neighbours have been the most inveterate of bird destroyers. The result has been so enormous an increase of those reptiles and insects which prey upon the crops of grain and other vegetable food, and so deficient a harvest, that we should not be surprised if the French Government were to resort to stringent measures to prevent this wholesale slaughter. Let us state two facts for the con-

sideration of our rural readers, and there we shall leave the matter for the present. The cockchafer deposits from 70 to 100 eggs, which are soon transformed into white grubs, which live on the roots of our most valuable vegetables. The weevil lays from 70 to 90 eggs, which, laid in so many grains of corn, become larvae, and soon eat up the corn. Now swallows, hedge-sparrows, and other small birds live principally upon grubs, caterpillars, and other insects and animalcules which prey on and destroy the products of agriculture. Ten swallows were recently dissected, and in their stomachs were found the remains of 5,482 insects, which must have been the results of a few hours' feeding. We trust that our farmers will be induced to think over this matter, and will not join in unreasoning crusades against sparrows and water-wagtails, on account of the supper at the "Toad under the Harrow," and the conviviality of the guests over the dead bodies of larks, wrens, finches, whitethroats, and others of the feathered songsters, whose notes, for purity, richness, melody, and variety, we will back against the boisterous glee of all the bacchanals who ever assembled at the "Toad under the Harrow" aforesaid.—*West Surrey Times*.

**THE LONDON SHOEBLACKS AND THEIR EARNINGS.**—The shoeblacks who stud the broadways of London, in their cheerful jersey's, yellow, red, and blue, have shown the possibility of turning out well. Nine years have elapsed since this branch of labour was introduced: and these boys, it is said, have earned about £12,000. Their united earnings for the last financial year amounted to £4,548, representing the blacking and polishing of no less than 1,119,320 pairs of boots.

**A SHYING HORSE.**—Nine out of every ten horsemen start in their seat whenever a horse shies, and then the horse is either by whip or spur driven up to the object. This makes horses look at any singular object, with more nervousness, for they expect a thrashing at the same moment. The rider should neither shy himself, nor notice it in his horse; and far less punish him.

**A VALUABLE DISCOVERY.**—Professor J. B. Turner says, that through a succession of experiments upon himself, his children, his horses, and other cases, he has discovered that Coal Oil is a certain and speedy remedy for scrofulous eruptions, and all kinds of local diseases, such as rheumatism, pains in the side, shoulders, back and joints, croup, sore throat, bruises, strains, cuts, and lacerations of all sorts on men and animals. He mentions several cases in his own family, where the application of this oil gave instant and permanent relief, and finding its effects so beneficial, he has thought proper to make the discovery known to the public.



## Editorial Notices, &c.

**SUBSCRIPTIONS TO AGRICULTURIST.**—We have to thank the officers of Agricultural Societies, and other correspondents, who act as agents for the *Agriculturist*, for their continued activity in obtaining subscriptions. The following statement, which was intended to have been published long ago, shows the prizes awarded for the 20 highest paid subscription lists to April 1st, 1861. Several correspondents who did not obtain prizes, would have been entitled to them if they had been sufficiently prompt in their orders and remittances:

| Correspondents.                           | No. of Copies | Am't of Premiums. |
|-------------------------------------------|---------------|-------------------|
| St. George Scarlett, Toronto, 277 copies, |               | \$20 00           |
| W. A. Cooley, Ancaster.....               | 238 "         | 19 00             |
| J. S. Wetenhall, Hamilton..               | 166 "         | 18 00             |
| R. Windatt, Bowmanville...                | 154 "         | 17 00             |
| M. D. Canfield, Ernestown..               | 124 "         | 16 00             |
| David Campbell, Almonte...                | 121 "         | 15 00             |
| John C. Kerr, Beamsville....              | 93 "          | 14 00             |
| George Robson, Whitby.....                | 78 "          | 13 00             |
| Wm. Brough, Gananoque....                 | 77 "          | 12 00             |
| John Lynch, Brampton.....                 | 76 "          | 11 00             |
| Hector Beaton, Pickering...               | 66 "          | 10 00             |
| Eric Harrington, Arnprior..               | 65 "          | 9 00              |
| James Wright, Guelph.....                 | 64 "          | 8 00              |
| Robt. Campbell, E. Zorra....              | 44 "          | 7 00              |
| James Keefer, Strathroy....               | 43 "          | 6 00              |
| James Young, Lanark.....                  | 39 "          | 5 00              |
| Thomas Wilson, Kingston..                 | 37 "          | 4 00              |
| Joseph Thomas, Barrie.....                | 36 "          | 3 00              |
| Wm. Patton, Paris.....                    | 35 "          | 2 00              |
| John Freed, Hamilton.....                 | 34 "          | 1 00              |

## Seeds! Seeds!! Seeds!!!

**JACOB GEORGE WAITE**  
181 High Holborn, London, England.

**HAS THE LARGEST STOCK** of VEGETABLE, AGRICULTURAL, and FLOWER-SEEDS, IN THE WORLD, and can supply dealers on better terms than any other whose sale house, as he makes most extensive arrangements with none but experienced growers do produce his supply of seeds, which are raised and grown from stock selected under his own personal superintendence, and as they are all cleaned and picked in his own extensive warehouses by an auxiliary strength of several hundred men and women, kept for that purpose, he is enabled to recommend, with the greatest confidence, every description of Seed offered by him for sale, and he therefore invites Seed Dealers to apply for his Catalogue.

**TERMS**—Cash, or satisfactory reference in England.

March, 1862.

6t.

## THOROUGH BRED STOCK FOR SALE.

**THE SUBSCRIBER** has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

## FOR SALE.

**A LOT** of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,

Dover Court.

Toronto, Aug., 1861.

## Notice of Partnership.

**THE** Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,  
GEORGE W. BUCKLAND.

## NOTICE.

**JAMES FLEMING & CO.,** Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

**JAMES FLEMING** will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

## IMPROVED BERKSHIRE PIGS

**FOR SALE** by Mr. Denison, Dover Court, Toronto.

Toronto, April, 1862.

## A Thorough Bred 2 Year Old

## AYRSHIRE BULL

**FOR SALE**, by Mr. Denison, Dover Court Toronto.

April, 1862.

## VETERINARY SURGEON.

ANDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,

Is Published on the first of every Month,

At \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

Subscription—Half a dollar per annum for single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

Editors—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

## Contents of this Number.

|                                            | PAGE. |
|--------------------------------------------|-------|
| The International Exhibition.....          | 353   |
| Tanner's Bark as a Manure.....             | 354   |
| Turnip Culture.....                        | 355   |
| Report of Minister of Agriculture for 1861 | 355   |
| Preparation of Food for Cattle.....        | 358   |
| Liquid Manure, Farming, Scotland.....      | 360   |
| Pig Breeding and Feeding.....              | 362   |
| Ill effects of Bad Corn.....               | 363   |
| Progress of Wages in Scotland and Ireland  | 365   |
| Sca-Weed as a Manure.....                  | 366   |

## AGRICULTURAL INTELLIGENCE:

|                                          |     |
|------------------------------------------|-----|
| Importation of French Merino Sheep.....  | 367 |
| New York State Agricultural Society..... | 367 |
| Hungarian Grass.....                     | 368 |
| Agricultural Productions of Nova Scotia. | 368 |
| Wool Exhibition.....                     | 368 |

## HORTICULTURAL:

|                                     |     |
|-------------------------------------|-----|
| Hamilton Horticultural Society..... | 368 |
| On the Decay of Orchards.....       | 370 |
| Trees and Rain.....                 | 371 |
| Cottage and Farm Gardens.....       | 372 |
| Onion Culture in Massachusetts..... | 372 |
| Raspberries.....                    | 373 |

## THE DAIRY:

|                             |     |
|-----------------------------|-----|
| Hints on Butter Making..... | 373 |
|-----------------------------|-----|

## THE POULTRY YARD:

|                                              |     |
|----------------------------------------------|-----|
| What Ails my Fowls?—Hen-Pecked Husbands..... | 374 |
|----------------------------------------------|-----|

## VETERINARY:

|                               |     |
|-------------------------------|-----|
| Diseases of Bone—Splints..... | 375 |
| The Brood Mare.....           | 375 |
| Mortality amongst Ewes.....   | 377 |

## MISCELLANEOUS:

|                                                                                              |     |
|----------------------------------------------------------------------------------------------|-----|
| Curious Phenomenon, Deep Dug Well, Alpaca Wool.....                                          | 378 |
| The Poet Laureate and the late Prince Consort, Old Customs, Be Cheerful, Parrots, Wheat..... | 379 |
| Kicking Horses, Educated Feet, Architects                                                    | 380 |
| Doctor's Emoluments, Icebergs, Costume, The Ash.....                                         | 381 |
| Agricultural Pastime, London Shoeblacks, Shying Horse, A valuable discovery....              | 382 |
| EDITORIAL NOTICES, &c.....                                                                   | 383 |

## FOR SALE.

A LOT of thorough bred ESSEX Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Olochmhor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE

# Canadian Agriculturist,

OR

## JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA.

VOL. XIV.

TORONTO, JULY 1, 1862.

No. 13.

### The Wheat Crop and its Enemies.

The wheat crop this year has not only had, in common with the other products of the farm, to contend with an unusually backward and dry season, which under any circumstances would render a rather light crop almost inevitable, but it has also yet to run the gauntlet of its numerous insect enemies. The wheat midge has been observed in various parts of the country in large numbers, either in the larva or in the perfect fly state, and unless some peculiar favoring circumstance should intervene, it is highly probable that the injury from this cause will be very considerable.

A few days ago, namely on the 20th of June, Mr. Charles Shaver, who resides on Dundas Street, in Etobicoke township, near Islington Village, brought us in some specimens of the larvæ of the Wheat Midge, which he had found in immense numbers on the surface of the ground in fields where he had wheat last year, and which are now in fallow, Indian Corn, potatoes, or other spring crop. His neighbours had found the larvæ in similar situations and similar quantities, but always only in fields which had been under wheat last year. Having been informed only about a week previously by a gentleman residing near the same locality, that he had already seen the matured fly in immense swarms hovering over the wheat fields this season, and not recollecting at the time of having ever heard of the larvæ having been seen in such enormous

numbers in the ground in the manner described by Mr. Shaver at this season of the year, we were at first inclined to suppose that the larvæ found by him and his neighbours must be the produce of eggs laid by the perfect fly this season, although it was a puzzling question how they could have got into the situations in which they were found.

On further consideration, however, and after consulting works written on the subject, we arrived at the conclusion that these larvæ were the same that had been left upon the wheat fields after harvest last year, and that they had remained there ever since, till awakened into activity by the warm rains which fell about the 18th or 19th, when they had worked their way to the surface. The Secretary of the Board of Agriculture was induced to address a note to one of the city newspapers embodying this view, and asking the attention of farmers to the subject. He has received several communications in reference to this letter, which make it quite evident that his view was the correct one. In fact there could be no doubt about it when the habits of the insect are studied. The circumstance of the perfect fly having been seen in great multitudes in one locality as early as about the 12th or 15th of the month, of the truth of which statement we are quite assured, and the same insect, but still progressed no further than the larva state, being seen a week afterwards in the ground, in such immense numbers, in another locality only a few miles distant, must we

think be accounted for by some local peculiarity of the soil or weather.

The insects found by Mr. Shaver doubtless remained quiescent in their earthy bed somewhat later than usual, in consequence of the long continued drought, and the comparatively cool weather, till, on the rain moistening the ground, they suddenly came up to the surface in such large numbers as to be conspicuously visible. Mr. Shaver first observed them while examining the progress of his field of Indian Corn.

Where the Secretary of the Board appears to have been in error, however, in his letter addressed to the newspapers, was in the time allowed for the insect to get into the winged state, after being seen on the ground in an active larva state. We had formed the impression that the larvæ in spring or early summer would be found in the pupa or chrysalis state, but they appear to come up to the surface as active maggots, and in a very few days afterwards, probably about a week, to be transformed into perfect winged flies, when, or very soon afterwards they commence their operations upon the growing grains.

An esteemed correspondent from the neighbourhood of Cobourg, informs us that he has frequently in the beginning of summer, after a rainy day, found the larvæ of the wheat fly in countless numbers on the surface of his fields where there had been wheat the previous year, and that on placing some of them in a glass they would become flies in about a week. Mr. Shaver, a week after he had brought in the specimens already mentioned, writes that—"The larvæ have nearly all disappeared. There are a few still remaining, but very few. I collected a few the day after I saw you and put them in a glass, but the earth got so dry they could not live. There are a few still in the ground, very near the surface. With another shower of rain they would come through. For two or three days back there are numbers of the midge flying through the wheat, but is too soon to detect the amount of injury done."

We have given some attention to this subject, not because there are any new facts disclosed, but because observations made under peculiar circumstances of season, &c., brought them into prominent notice. It is important that farmers

should become thoroughly conversant with the habits of an insect which is capable of doing such enormous damage to our most important field crop, for they will thereby be better enabled to guard against its ravages.

A writer in this journal two or three years ago suggested that where the wheat midge has infested a crop, the field should be deeply trenched in autumn, covering up the surface entirely out of sight, and that it should be left in that condition, without ploughing again, for an entire year, that thereby the larvæ should be smothered and never able to reach the surface again. Were it possible to induce every farmer in a section of the country to adopt such a plan, perhaps the evil might be to a great extent removed. It is not probable that the insect would be able to rise to the surface through any great depth of soil. The suggestion may be worthy of consideration by those who are most deeply interested. Due attention, however, to well recognized remedies may secure partial exemption: Take care to destroy such of the larvæ as come into the barn, and are blown out with the chaff on cleaning the wheat. Sow fall wheat early, and of an early ripening kind, on well drained and well prepared soil, so that it may escape winter killing and come into ear early enough in spring to escape damage. For spring wheat choose an early ripening kind and sow late, so that it may come into ear after the fly has disappeared.

This year, another insect pest threatens to infest the wheat crop in this part of the country but fortunately, in this case, although the creature is from its numbers of sufficiently formidable appearance, we believe it is not likely to inflict any very serious injury. Mr. Shaver, already mentioned in this article, has brought us in several ears of wheat in which are found a pretty large number of the grain aphid. A notice of this parasite was given in the *Agriculturist* of August 16th, last year. It appeared in the eastern part of Upper Canada last year in such large numbers in some cases as to give the ears of wheat a brownish appearance, but did not seem to injure the crop much. These aphides are found in the crevices between the different lobes of the wheat ear. They are from a dark brown to a grass green in color, and are



very similar in appearance to the common plant louse, often found on some garden and greenhouse plants. They increase with incredible rapidity. We shall be glad to hear from any of our readers who may make any observations upon the movements or progress of this new wheat parasite.

### Remedy for the Turnip Fly.

Mr. E. G. O'Brien of Shanty Bay, near Barrie, informs us that he has for several years used the following prescription to prevent the ravages of the turnip fly, and on each occasion the plant has escaped injury, an exemption which he imputes the effects of the preparation: Oil of turpentine, one teaspoonful to 1 lb of seed, stirred till the oil is absorbed, and the seed held between the eye and the light will have a shining, glistening appearance. The seed should then be immediately sown. Several of Mr. O'Brien's neighbors have used the same remedy and always with the same successful result, which they attribute to the odour or some other property of the oil. It is the oil, not the spirits of turpentine, which is used, and which may be got of any druggist. The writer of this paragraph has on several occasions used fish oil in a similar way, and always with favourable results, but whether the safety of the plant was due to the prescription, or to some other favoring circumstance, he could not feel very confident.

### The Season and the Crops.

We have passed through the last three or four months, a period of extraordinary weather. The large quantity of snow that fell during winter went off with little or no rain. Spring opened late, with occasionally a very low temperature, and somewhat severe frost has now and then occurred up to the middle of June. May was the driest month experienced here for many years. A severe drought has consequently been spread over the greater portion of the Province, and neighboring States. Fortunately in some sections refreshing rains have fallen during the last fortnight, and we should hope that there are but few localities that have not in some

degree been thereby benefited. In some districts the crops have suffered irretrievably, and cannot be expected to realize an average, while in others, owing to better soil and culture, and earlier showers, things wear a more promising appearance. The hay crop, generally, must inevitably be short, and the season has not been favourable to the sowing and germinating of turnips, carrots, mangels, &c.; extensive breadths of which have been put in; and however late this has been done, if the weather should from this time prove favorable, good returns may be expected. In this way the certain and great deficiency of hay may, to a great degree, be compensated. We have heard of some farmers sowing Indian Corn and Hungarian Grass with this view, and no doubt they will reap the benefits of it next winter in the better sustentation of their cattle. In a season of drought and cold like that we have been experiencing, the difference in the appearance of the crops on well and badly managed land is most striking. We observed the other day on a naturally good, and an extremely heavy soil, two adjoining fields in winter wheat. One had been thoroughly underdrained and duly cultivated; the other had not partaken of these ameliorating agencies, and the consequence is, that while the crop on the former looks far better than could be anticipated, considering the season, and promises, at present, to be highly remunerative, the latter must prove, however favorable the weather may yet be, *all out a total failure!*

### The International Exhibition.

LONDON, England, 28th May, 1862.

EDITORS OF THE CANADIAN AGRICULTURIST.—I have been every day since I wrote last at the Exhibition, except on Saturday last, when I went to the Sydenham Crystal Palace to see a Flower show and hear a Concert, both of which were highly pleasing, and were attended by some 12 or 13,000 visitors. One of the interesting sights to be seen was the playing of the numerous fountains, which was very fine, but continued only for a short time. They are supplied by water brought in by artificial means, and the expense, I am told, is not less than £50 for each half-hour. The one great defect in this really fairy-like scene is the want of a reservoir at a sufficient elevation to supply the water, but the whole is so grand and interesting that the defect

may be overlooked. Although the Palace is visited by such large numbers, it is said not to pay the stockholders. This is certainly a pity, for it is a most attractive place of resort, and it would be a great misfortune if it should be allowed to go down for want of funds. The expense of keeping it up, and making the improvements that are continually going on must be enormous.

But to return to the Exhibition—The jurors have been employed in the examination of the products of Austria and Hungary, where there is evidence to be seen of a convincing kind in proof of the productiveness of those countries. The wheats are many of them very fine, though as a whole, not equal to those from the Australian Colonies of Great Britain. The manufacture of flour is carried to the highest state of perfection. Indian corn, or maize, as it is called by the inhabitants, and in fact by every one here, is produced in great varieties, and of excellent quality. But the produce that seems to be the most abundant is beans, which are shown in endless varieties. What are called "chick beans" are a variety that, I am told, occupy as prominent a position in those countries, and are in as general use for human food, as oat-meal in Scotland. The manner in which the whole of the products are displayed is admirable, and reflects much credit on those who have had the control of them. No pains or expense seems to have been spared to make a neat and pleasing exhibition. Their wines are exhibited in great abundance and variety, and of vintages extending back for ninety years. I was yesterday invited to taste a wine 92 years old, and found it excellent. The wools of Austria and Hungary are of the very finest quality: and their manufactured woollen goods are, of course, of a corresponding description, and are exhibited in endless varieties and immense quantities, tens of thousands of pounds worth. The manufacturing processes of those countries are conducted with the greatest possible care and skill, and the products cannot be excelled. The prices marked on their goods, particularly the fine cloths, are such as I should think would tempt the merchants of many other countries, our own amongst the rest, to open a trade with them.

We are to-day to be employed in the examination of the products of Portugal. Their collection is very extensive.

I contemplate going to-morrow to the West of England Cattle Show. It is held at Wells, about 140 miles from here. From Wells I expect to go on to Exeter, about 80 miles further towards the Land's End. The Show at Wells is expected to be very good. It is said generally to come very near the Royal Agricultural Society's Shows in interest and extent. I shall be able to give you some account of it in my next, I hope.

Your's &c.,

E. W. THOMSON.

## The West of England Agricultural Show. —the International Exhibition.

LONDON, 4th June, 1862.

The weather, which has been during the most of May very wet, has set in with June very fine. Yesterday was delightful; and this morning is equally so. On Thursday, I went to Wells, a distance of some 120 miles, to see the West of England Cattle Show. The place is one of the most pleasant that could be selected. The grounds enclosed are on an inclined plane, sloping gently to the South, and from the highest part overlooking the finest panorama of scenery I ever saw. I went on Friday to Exeter, and returned thence to London.

On Thursday, while at the Show grounds, the day was very fine, but it came on to rain on that night, and Friday was a regular wet day, and must have produced the usual amount of discomfort at the Show. I was, however, on the cars, riding through an exceedingly interesting and beautiful part of England, as indeed is all the route from London to Exeter.

With the show, I was in some respects disappointed. The number of animals exhibited fell very far short of what I expected to see. There were a few very fine animals amongst the Short Horns, Devons, and Herefords. Horses were very poorly represented. Some good colts and fillies of the heavy cart horse breed, one or two Suffolk Punches, but I looked in vain for a thorough bred, or even a Cleveland Bay; there were a few ponies. The sheep and swine were good, the improved Berkshires being the prevailing breed of the latter, and very large and fine. In sheep there were some of the most beautiful Leicesters I ever saw, and which quite convinced me that very few, if any, of the sheep exhibited at our shows in Canada as Leicesters are pure bred. The Southdowns were perfect pictures. The Cotswolds are large, but fall far short of the others in point of symmetry. There were a few of the horned breeds, which, with their immense horns, and well developed carcasses, were majestic looking fellows.

The show of poultry was good. A cock and two hens were generally shown together in a crop or pen. They were certainly very fine to look at, though I should doubt their being worth the prices at which they were marked for sale, ranging from five to one hundred guineas. They were, I am bound to say, the finest specimens of the various breeds I have ever beheld, but the prices seemed to me to be ridiculously out of proportion to the possible value of the article.

In the Implement Department, there was a good variety of all the labor-saving implements and machines, and all of the best material and workmanship. I counted 24 Steam Engines in operation, all of the portable kind, driving threshing machines, straw cutters, turnip cutters,



fanning mills, and various other things. There is an important improvement in the threshing machines in the contrivance for shaking the straw. It does it effectually, and is much less cumbersome than the old plan. I hope that some of our mechanics will copy it. I will try and get an intelligible description of it.

I will now return to the Exhibition. We are not yet done with our inspection. We have got through the very extensive collections of France, Austria, and Hungary, all of which are exceedingly good. We have the products of one or two European countries yet to examine, and have to complete the examination of the products of Victoria, Australia, which have only just arrived, and are not yet ready for inspection. No country is able to produce such splendid samples of grain as Victoria, while the specimens of the products of her mines proclaim her wealth to be also immense in the useful and precious metals. The progress she has made within the last ten years is astonishingly great, and she is sparing no pains to make it manifest to the world by the very fine display of her products at the International Exhibition.

The Epsom races are going on this week, and seem to absorb the attention of the public very generally. As I write the road is full of people on their way there to witness or participate in the sports. I do not intend to go to the races, as they are not exactly in my line.

On Monday, it being the first one shilling day at the Exhibition, there were about 26,000 visitors. Yesterday the number increased to 35,000. There will no doubt be a gradual increase, as cheap excursion trains are advertised on all the railroads. Crowds of people will be able by that means to gratify their curiosity, and derive much instruction and benefit from seeing this the greatest display of the products of human industry the world has ever witnessed. It is now universally admitted that the Exhibition of 1862 far surpasses that of 1851 in interest.

There is one portion of the Exhibition to which it would be in vain for me to attempt to do justice. This is the Western Annexe, where the very extensive collection of manufacturing machinery is in motion, doing every kind of work, and producing a din and clatter that are deafening, but which at the same time is in a greater degree than I can express interesting and instructive. The English Artizans have not by any means got it all to themselves. France, Belgium, and the Zollverein have their extensive machinery at work, showing that they are not far behind their neighbors, and that they are willing to contribute to the utmost of their power in giving a further stimulus to the inventive genius of the age. Most glorious and beneficent must be the result of the united efforts of the world in this great International Exhibition of Industry and Art; and by no means an unimportant advantage is the bringing together of the inhabitants of the various countries of the earth

to form acquaintances which will give them better impressions of each other than they could acquire in any other way, or by much more expensive means.

Yours &c.,

E. W. THOMSON.

### Botanical Society of Canada.

A NEW FIBRE PLANT SUITED TO THE CLIMATE OF CANADA.

(From the Kingston Whig.)

His Excellency, Viscount Monck, has communicated to the Botanical Society of Canada some valuable information respecting a fibre plant sent forth from the Rocky Mountains by Dr. Hart to Lord Lyons, which the Society's Secretary has determined to be an *Asclepias*, and which is now under experiment in the Botanical Garden at Kingston. Since the publication of the various details in the Society's "Annals," the following communication has been received from His Excellency's Secretary:—

"The Governor General's Secretary is directed by his Excellency to transmit to the Secretary of the Botanical Society of Canada the inclosed copy of a letter from Dr. F. W. Hart, of St. Louis, respecting the mode of treatment pursued in the culture of the silk plant from the Rocky Mountains.

"Government House,  
Quebec, 2nd June, 1862." }

COPY.

ST. LOUIS, No. 64 Fourth St., Mo.,  
May 22nd, 1862.

To His Excellency Viscount Monck:

Simultaneously with a letter from Lord Lyons, one from the Secretary of Your Excellency (16th May) was received.

In answer to your request, relative to the treatment of seeds of the Silk Weed:—The Silk Weed is adapted to rich, moist, bottom soil. I recommend the London district, Canada West, or any where along the country the Welland canal runs through, or on the banks of the St. Lawrence, Canada West. The ground for planting should be prepared as follows:—Plow up four furrows, thrown together, then harrow down the ridge to pulverize it. Plant the seed about 12 inches apart in the centre drill made by the centre teeth of the harrow, cover lightly with the harrow or hoe; when the plant is three weeks old hoe the weeds away from it, then, with a light one-horse Yankee plough, bar off on both sides of the ridge, and about 6 inches from the plant, coming back immediately with the plow, and throw a furrow back to the plant, thereby hilling it in on both sides. If the season is dry, throw two furrows to the plant; the oftener the middles are plowed out, the more the plant will grow; it will not bear dirt taken away

from it, but will stand hilling; the larger the plant grows, the more dangerous to plow so close as to cut the plant; the side roots supply the branches and bulbs. After the 14th of August the plant must be cultivated no more; must be left untouched.

The Pods are ripe when they change color from a pea-green to a dark green and yellow. On pressing a pod it will split, when ripe; they ought to be gathered before they split open. Squeeze a pod open, and, with the thumb and forefinger of one hand, seize the silk where it joins the bottom of the pod, and the thumb and forefinger of the other hand, making a circular sweep; all the seeds are detached at one sweep, leaving the richest mass of satiney silk; the seeds to be thrown in one sack, the satin or silk in another. I have been precise in my directions, entertaining the most explicit confidence that the silk can entirely supersede the cotton plant. Its fibre or staple is longer and firmer, and of a gloss no silk or satin can match. During ten years I have planted cotton in Yazoo, Mississippi valley. My brand was sought by the Liverpool and Manchester speculator, and brought the highest prices; and on that practical experience I ground my convictions with regard to the Silk Weed, and, as a Canadian, I feel a double interest toward its success for Her Majesty's Government. I shall be happy on all occasions to convey to your Excellency any further information that may be required, and inclose you a few more seeds, and remain your Excellency's

Most obedient servant,

(Signed), FREDERIC W. HART, M. D.

\* Who knows but this fibre plant, Silk Weed or *Asclepias*, may, from its hardness, glossiness and fibrous texture, yet take the place of cotton, which could not grow in Canada, lying so far north as it does. But this plant, borne from the heights of the Rocky Mountains, may find a more congenial home in the less rigorous climate of Canada.

### Cotton.

*Editor of the Canadian Agriculturist.*

SIR,

The "Leader" of this day's date contains an interesting notice, transcribed from the "Kingston Whig," of a plant sent from the Rocky Mountains by Dr. Hart to Lord Lyons, and which, it is suggested, may be grown in Canada, and prove a substitute for the *Gossypium herbaceum* or "cotton-plant."

The plant in question has been pronounced by the Secretary of the Botanical Society of Canada to be an *Asclepias*; and is denominated "a new fibre plant."

A few additional observations respecting this plant may not be uninteresting to your readers.

The *Asclepias*, so called after *Æsculapius*—

the former name being Greek, the latter, Latin—belongs to the Milkweed family. The author of the article on Botany in the Edinburgh Encyclopedia divides this family into 51 species, Johnson and Paxton into 36, and Gray into 22. the plant referred to is by no means a new plant, if it is, as I apprehend it to be, the *Asclepias Syriaca*, for it was known as a native of North America in the year 1629. The "Lower Canadians" are, I believe, well acquainted with it, and are accustomed to use the Spring shoots as an esculent, and to stuff their beds with the cotton concealed within its pods. This cotton is, as described in Dr. Hart's communication, of the softest possible texture, and has, in consequence, been called "Virginia Silk." In the Edinburgh Encyclopedia but two habitats of the plant are named, — *Virginia* and *Astracan*. Of the 36 species described by Paxton, 24 are natives of North America, and 26 are hardy.

There is one of these Milkweeds, *Asclepias tuberosa*, the Pleurisy-root, with whose beautiful bright-orange umbellate blossoms the inhabitants of Peterboro' are doubtless familiar; and others of the same family may be found in our neighborhood.

I imagine that there would be no difficulty in cultivating the Silkweed in Canada, by sowing the seeds in a very light soil and giving them plenty of room; but whether its cultivation would eventuate in the beneficial result anticipated by Dr. Hart is another question, and one more difficult of solution. The experiment may be at all events worth a trial. Sugar, if I mistake not, has been manufactured from its blossoms.

I am, Sir,

Your obedient servant.

V. CLEMENTI.

Peterboro', June 23, 1862.

[If the plant referred to in the foregoing communications is the common milk weed, so well known as a troublesome weed in many parts of Canada, as we are inclined to suppose it to be, from Dr. Hart's description, any expectations of its proving valuable for manufacturing purposes will, in our opinion, certainly be found fallacious. The silk, though beautiful to look at, has no more strength or tenacity of fibre than thistle down, and we doubt its being of much more value for any useful purpose.—Eds.]

(ne plant of the wild carrot (*Daucus carota*), having 600 flowers and two seeds to each flower, gives 1,200 seeds.

One plant of the wild parsnip (*Pastinaca sativa*) gives the same as the above.



There are several varieties of barley shown, two-rowed, four-rowed, and naked barley. There are several beautiful bright samples, the weights of which are stated to be, two-rowed 58 lbs and four rowed 46 lbs per bushel. From the evidence before us, we should expect that Canada is capable of producing superior qualities of barley, adapted for the production of high hopped ales, such as are brewed at Burton-on Trent, by Bass and others. The oats, beans and peas are of various kinds, the whole of the samples being distinguished by a general excellence. Lower Canada shows some very good specimens of the maize or Indian corn, showing how much even a short summer, if dry and hot, can do to ripen this plant, which hates moist skies and loves the

sun. The samples of maize shown are of the white and yellow varieties. The cobs of maize are large, and the samples of the grain are generally excellent. Buckwheat, linseed, and samples of flax straw are also shown. The flax and flax seed give promise that Canada may yet become an extensive exporter of seed and fibres.

Another proof of progress in agriculture in Lower Canada is furnished in the exhibition of drain tiles, manufactured there by the Missisquoi Drain Tile Company and others. A very short time ago there was not a thousand acres in Canada properly drained with tiles. Now it is becoming a matter of contest who shall use the most and soonest. Back from the plain districts we have named, stretch hilly, broken pasture lands, abounding in wild romantic scenery, plentifully watered with mountain streams, and affording an excellent grazing country during the summer months. There, oats; root crops, and grass are the staple products, but they are very indifferently represented here. There are some specimens of timothy and clover seeds; these are good, and clover seed might form a far more extensive part of the exports of Canada than at present. And to represent the produce of the dairies, we have a single cheese of a decidedly American style of manufacture, and one little crock of excellent butter, which comes, however, from an esteemed correspondent, Mr. James Logan of Montreal. In Canada the farmers make a great portion of the sugar they use from the sap of the maple tree, and there are exhibited several good specimens of this—those from Lower Canada being decidedly the better. A bale of hops is also shown, grown on the island of Montreal, of very excellent quality, but not very carefully picked.

We turn next to the Upper or Western Province—the great wheat producing district, and concerning its products we have the advantage of information gathered from Colonel Thomson, a leading agriculturist there, and President of the Board of Agriculture. He is also a juror in this class at the exhibition. Specimens of winter wheat are exhibited from the counties of Durham, Peel, Wellington, Lincoln, Wentworth, Oxford, Brant, Elgin, Kent, and Lambton, extending over a distance of 250 to 300 miles from east to west. Here are comparatively new soils, admirably adapted to the growth of wheat, as yet in very few instances exhausted. The farmers of Upper Canada, warned in time, are beginning by careful cultivation and rotations to guard against the evils suffered in the east, and in parts of the United States, though it is still too common a practice to grow wheat, as the most saleable product, year after year.

There are twelve good samples of half a bushel each. One quality of the wheat is good, being generally plump and of a bright clear colour; a portion are white wheats, average weight about 62 lbs. per bushel. One sample shown by Mr. Fleming, seedsman, Toronto,

weighs 66 lbs. The samples exhibited are all white wheats of highest commercial value, and are grown in all parts of Canada West. The usual quantity of seed sown per acre is  $1\frac{1}{2}$  bushels, and the yield is, when the soil is properly cultivated, from 16 to 40 bushels per acre, according to season and other circumstances. The average amongst good farmers is about 25 bushels; but a too numerous class of cultivators do not get an average of more than 13 bushels. The most reliable information Colonel Thomson has been able to collect (covering a period of ten years), gives a general average of 17 bushel per acre. 45 and even 50 bushels have been obtained in some cases in particularly favourable seasons. Their best wheat lands are marly clays and gravelly loams, with more of the calcareous element present in the soil.

The winter wheats are generally designated as "Soule's," "Blue Stem," "Red Chaff," and "White." These, I am told, are the best varieties of wheat grown in Canada, and command the highest prices in the Canadian markets, and those of the adjoining state of New York, being much sought after by the millers of that State to mix with inferior wheats grown there and in the Western Federal States, the flour being thereby made to command a better price for home consumption or export.

As to the name of Soule's Wheat, it is said to have been first introduced into Upper Canada by a person of that name, being brought from the State of Virginia. The Blue Stem has very naturally taken its name from the fact that the stem or stalk is of a bluish colour. One of the recommendations of this variety is that the straw is stiff, and never lodges, and consequently is easily harvested.

The old Red Chaff White has long been favorably known in Canada, as has also the Velvet Chaff; but the latter is now rarely met with. Another variety that was in favor ten or twelve years since, was a bearded wheat known as the "Michigan," having been introduced into Canada from the State of that name. It was supposed to resist the ravages of the fly better than any other; but the grain was found not to yield as much flour as the other varieties; consequently it will not now command so high a price.

The spring wheats shown are common to Canada East and West—some of the finest being grown in the vicinity of Montreal.

The Fife is an early wheat, and comes to maturity even when sown a month later than the date at which other spring wheats are sown. The ear does not appear until it is too late for the fly to deposit its ova in it. Being besides a good wheat, both as regards productiveness and its value to the miller, it has become a general favourite. It is a red wheat, and without awns. The Golden Drop is a fine wheat, it being also as well as the Black Sea wheat, without awns. There are besides one or two samples of bearded wheat shown, but they are not favourites.



The yield of spring wheat is often as high as 35 bushels to the acre; 20 to 25 is common on ordinary lands, and it does well to follow a root crop or maize (which are similarly weeded with hoes), and to be sown out with grass seeds. A mixture of Timothy and Red Clover—four lbs. of Timothy and six lbs. of clover per acre is the usual quantity sown. These wheats are not worth so much by ten per cent as the autumn sown wheats, as they do not yield flower that will bear transportation so well. In some parts of Upper Canada, however, where winter wheat was formerly grown, the spring wheat has superseded it. This change has occurred principally in this wise—During the severe frosts of mid-winter the growing crops and grass are protected from harm by the deep coating of snow under the deep coating of snow under which they are buried. While the fields are defended from the bleak winds by the kindly shelter of the surrounding forests, this protective covering was pretty well assured. But as the country is denuded of the trees the winds sweep over all the plains and exposed places, and the young wheat and sometimes the grasses themselves in the meadows are so frozen as to be what is termed “winter killed;” of course spring wheat is not exposed to this danger. Of the excellent fruits grown in Canada, none are shown here, but some very good coloured lithographs of the natural size. The Royal Agricultural Society, London, have invited all the world to a contest for superiority, at their October show, and we are given to understand that Canada is likely to be a not unsuccessful competitor. Melons, cucumbers, and tomatoes are grown in almost all parts of the colony, in the open air, and the standard peach gives excellent fruit at Montreal, and throughout the southwestern province.

Several fruits are produced in great perfection in Canada, the soil and climate being generally well adapted to for the growth of the apple, pear, &c. With the view of showing the capabilities of the colony, there are exhibited 114 coloured plates of the fruits. These plates are beautifully executed, and are stated to represent the natural sizes of the respective varieties of the fruits produced in the open air. The plates were prepared by the Fruit Grower's Association of Upper Canada.

*Written for the Canadian Agriculturist.*

### Hints for an Agricultural Report of the Township of Hamilton.

The Township of Hamilton is the most westerly township in the County of Northumberland, and may be said to lie between Lake Ontario on the South, and Rice Lake on the North.

The land for two or three miles from Lake Ontario is generally level; the soil is clay or a strong clay loam; behind this level ground there is a series of small low hills, and undu-

lating land, which seems at some former period to have been the lake beach. The soil on this rolling land is generally lighter, in some places gravelly, in others covered to an inconvenient extent with boulder stones; such as geologists attribute to the action of icebergs. Behind this we reach the highest land between the lakes, commonly called the “Plains.” These heights and plains reach nearly to Rice Lake; they are, generally speaking, covered by from two to six inches of light yellow sandy loam, almost destitute of vegetable matter, except where the action of some streamlet has caused a difference in the character of vegetation. But their peculiarity lies in their subsoil; up to a recent period this was thought to be very inferior, but it is now ascertained to consist in many places of heavy brown, or reddish clay, in others of whitish clay, mingled with friable limestone, and in a small minority of cases, as far as our information goes, of sand. These plains were formerly thought unworthy of cultivation, but have now been found to produce good crops of wheat (both of fall and spring); and in fact to grow profitable crops of all kinds of farm products. The township is stated by last census to contain 40,891 acres under cultivation, and the cash value of the farms is set down at \$2,254,929. To this ought to be added the land under *farm cultivation* returned for the town of Cobourg, which is situated in this township, viz., 1009 acres valued at \$177-350. Annexed to this report will be given a tabular view of the different agricultural productions, and the quantity of land under the different crops, as far as these can be ascertained from the returns of the late census.

In preparing a few hints for an agricultural report, we intend noticing briefly: Horses; the different breeds of Cattle that are reared in the township, Sheep, Pigs, the various Agricultural Productions—the Insects or Diseases that have affected our crops—Improved Implements—Agricultural Societies, &c., &c. At the outset, we would say, that few townships have been more fortunate in having been settled by an enterprising class of farmers, who have successfully introduced the various breeds of cattle, &c., as the number of premiums awarded to farmers in this township at the various Provincial Exhibitions abundantly testify, a list of which prizes, as far as we can ascertain them, is annexed.

**Horses.**—The township has perhaps paid less attention to the improvement of the breed of horses than to any other of our farm stock. This may partly be accounted for by the nearness of all parts of the township to market, so that the horses were more employed on the farm than used on the road; still there are many good teams in the township, and a

marked improvement has taken place in late years. About 1840, the County Agricultural Society, among other improved stock, introduced the stallion "Ploughboy," who was mostly kept in this township; and though his stock grew rather slow at first when young, yet they proved very useful, hardy horses, both for the farm and the roads. Indeed, some of the best horses in the township are from his stock. Some years after this, the late Mr. John Mason, of Cobourg, brought in "Clyde Britton" a stallion of the celebrated Clydesdale breed, and for a few years he was a great favorite with our farmers; but his stock hardly answered the expectations formed of them, though they made rather useful farm horses. The Township Society for two successive seasons offered a handsome premium for a stallion to travel in the township. The first year the premium was awarded to a horse of the "King Alfred" breed; the second year to one of the "Rainbow" breed. The stock of both promise to be useful, and an improvement on our former breed of horses. N. Grimshaw, Esq., has imported from England one of the celebrated "Suffolk Punch" breed of horses; and has travelled him for the last two or three years; his stock has not been sufficiently proved yet to enable us to judge fully of their merits, but we trust they will be a great improvement to our breeds of horses, and prove amply remunerative to his spirited importer. The Messrs. Underwood have this season brought in from the west, a fine large horse, the "Royal Prince of Wales," and are now travelling him through the township.

*Cattle.*—Following the order of their introduction, as well as that of our prize list, we shall notice, first, the "Durham," or as they are more appropriately called, "the Improved Short-horns." Of this class, the first one was brought into the township, as far as we know, by the late Mr. Robert Wade, of Maple Grove, who introduced the bull Forester, some thirty years ago; his stock was a great improvement on the breed then common among our farmers, and laid the foundation for much of our present improved stock. Mr. Wade followed up the stock of this bull by others; and at a later period, imported some fine heifers of this breed from England. When he retired from farming, his stock was sold by auction at high prices; and was widely scattered over this and the neighbouring townships. In this field, he was followed by his sons, John Wade, Esq., of Hamilton Gardens, whose stock is well known, and is now the largest and finest of this breed in the township, and also the late Mr. Ralph Wade (who was killed at the unfortunate Desjardines Bridge accident), made several importations from England, in which he met with great losses by deaths of stock at sea and otherwise. His stock was mostly

sold after his death, and were thus spread over the country. His family still retains part of the stock.

George Roddick, Esq., has imported several superior animals of this breed from Britain. His stock is well known, and is fast spreading over the country. There are several other owners of this class of stock in the township; but we are not aware of any other breeder that has imported from abroad. A. Alcorn, Esq., has a small herd from imported stock. All the above named breeders have been awarded prizes for their stock at our Provincial Exhibitions.

*Devons.*—This breed has never been held in such favor by our farmers, as the Durhams, nor are their grades so widely spread in the township. The first bull of this breed, so far as we know, was introduced by Thos. Eyre, Esq., and afterwards became the property of the late John Mason; when in his possession, this bull, "Billy" gained many both local and Provincial prizes. At our earlier Provincial Shows, Asa A. Burnham, Esq., and Mr. J. Mason were among the most successful exhibitors of this class of stock. The principal breeders in the township at present are the Messrs. Eagleson, and Wm. Mason. We are not aware of any of them having imported any stock, and they have contented themselves with local honors, as none of this breed has been shown from this township at any of our late Provincial Shows.

*Ayrshires.*—This breed was much later in being brought into the township than either the Durhams or Devons. Mr. Robert Brown when in this township, was the first to bring in an Ayrshire Bull, and his stock proving excellent, especially for dairy purposes, he was encouraged to buy an imported bull at one of our Provincial Shows, which still further improved his stock, but the principal, best known, and most successful breeder of Ayrshires is P. R. Wright Esq., whose stock besides all the other prizes, both local and Provincial which they have taken, took the premium for the best herd at the two last Provincial Exhibitions. Mr. Wright in beginning his herd, had the misfortune to lose his first importations; which were all lost at sea on their voyage from Scotland.

*Galloways.*—This breed of cattle is the latest of the improved breeds that has been brought into the township; they were introduced here by Mr. Wm. Roddick, who imported from Scotland some fine specimens of this breed in 1854, (amongst the first ever brought into the Province.) They have proved very hardy, and suitable to our climate, and are fast spread over the country; although there are many grade animals of this class in the township, there are no full bred ones except the stock of



George and William Roddick, whose herds have figured in our local and Provincial Prize List for several years past.

These are the principal full bred herds in the township. The great mass of the cattle are still, and will probably long continue grades—of the various breeds, chiefly Darhams, which are most widely spread among our farmers here—as they are all over the province.

**Sheep.**—In no class is there so much improvement shown as in sheep, and they are more generally diffused among our farmers than any other kind of stock; it has become very uncommon to see any of the old common breeds, even among those sheep that are still turned out to pasture on the roadsides and woods during summer. Among the first introducers of improved sheep was the late Mr. Robt. Wade, who brought some of the "Teeswaters" into the township; shortly after Mr. Wm. Brown imported some "Leicesters," and from those the first great improvement of our sheep stock was made. The late Mr. Ralph Wade made several large importations of "Teeswaters or Improved Leicesters." Mr. George Roddick, Mr. A. Alcorn, Mr. R. Hume, Tyndale, Mr. Wright and others have made importations of this variety of sheep, and many others of our farmers have either imported or procured from imported stocks, and are in possession of fine flocks which are both profitable to the owners and creditable to the township. Mr. Wm. Roddick imported some of the "Cheviot" breed of sheep in 1854, the first, we believe, brought into the Province. They have not been received with the same favour as the "Leicesters," and the full bred ones are still in few hands; their hardiness, comparatively fine wool, and a disposition to fatten readily at an early age, render them a very suitable breed for the country. The fine woolled breeds have never had much attention paid them in this township; which is rather surprising, considering that we have the well known "Ontario Mills" woolen factory in our midst, which uses a very large quantity of fine wool, that has to be imported; thus sending money out of the country that might be beneficially kept at home. We think if some of our spirited and enterprising farmers would try a flock of fine woolled sheep it might prove profitable to themselves, besides being a benefit to the township. A. A. Burnham, Esq. has a small flock of Southdowns, the only one we know of in the township—they took several prizes at our earlier Provincial Exhibitions. Mr. Thos. Taylor imported a few of a breed called South Hams, but they were not received with much favour, and we don't know of any of the breed kept pure.

**Pigs.**—In looking over the Provincial prize lists we observe that our Township has taken fewer prizes for Horses and Pigs than for any other class of stock; still though we have very few noted pig breeders, our pigs are generally improved—it is seldom we now see those speci-

mens of the *genus sus* known by the names of *Land pikes* or *Razor backs*, which used to be common. The pigs in the township are generally white in colour, and fatten easily at an early age, but as we are near a market for all kinds of coarse grains they are not kept in large numbers, nor thought very profitable by our farmers generally.

P. R. Wright, Esq. introduced the Suffolk breed, and was a successful competitor at several of our Provincial shows, but though crosses of this breed are to be found, the pure breed never spread much in the township.

(To be Continued.)

### The Value of Coal Ashes and Cinders.

Coal ashes, is as a general thing, thrown away and thought a nuisance. But after some experiments, I am inclined to take a different view of the matter.

It may be, and undoubtedly is the case, that they are less valuable than those derived from wood. The ashes of coal contains gypsum, lime, and phosphoric acid, but its main bulk is composed of insoluble silica. I have found coal ashes to be very useful in the peach orchard; in the fall they should be spread around the root of the tree at the rate of of a good sized wheel barrow load to each tree, and spread some five inches thick at the trunk, and sloping off gradually all around; the ashes should be allowed to remain in this position until the tree is out in blossom, when it should be spread over the orchard. I consider that I have derived much benefit from this plan, and would account for it in the following manner. We all know by experience that a large pile of coal ashes will retain the frost much later than common soil—the ashes at the trunk of the tree (as I have proven by experiments,) retains the frost later in the spring, and prevents the tree from coming out in bloom too soon. Another good effect is that ashes thus applied will keep off the peach-worm, which is often so destructive to the trees. Besides these mechanical advantages, coal ashes contains snbaucues which are beneficial to vegetation of all kinds. Last winter I kept a portion of coal ashes under shelter until the ground was well frozen, when it was spread as before; if the effect should be thereby changed, I will report at the proper season. This system will apply as well to the other fruits as to the peach. I have tried it with the same effect on apple, pear, and cherry trees.

If coal ashes produced no other effect than the mechanical one of loosening the soil, it would still be valuable. But the following analysis by Professor Norton, proves it to be valuable as a manure. He found one hundred parts of ash

from white ash coal without any wood ashes from kindling, contained of

|                  |       |
|------------------|-------|
| Insoluble silica | 88.08 |
| Soluble,         | 0.09  |
| Alumina,         | 3.36  |
| Iron,            | 4.03  |
| Lime             | 2.11  |
| Magnesia,        | 0.19  |
| Soda,            | 0.22  |
| Potash,          | 0.17  |
| Phosphoric acid, | 0.20  |
| Sulphuric acid,  | 0.86  |
| Chlorine,        | 0.09  |

Those who advocate the application of Iron to peach trees will find another reason for my success in the amount of that substance contained in coal ashes

One of my neighbors has for many years applied coal ashes to his potato patch as a preventive of rot, and has not since been troubled with rotten potatoes. He retains the same piece of ground several years in succession, and applies coal ashes in large quantities each year. He attributes his success to the loosening or mechanical effects of ashes, but I attribute his and my own success in this line to early planting and early digging.

As to whether it will pay to buy or haul coal ashes far, I cannot say, but by the above analysis we see that nearly ninety pounds in every hundred is of no value as a manure; that the whole potash from one ton of coal ashes would amount to but three pounds, which may be obtained at a cost of twenty-five cents; the sulphuric acid would amount to but eighteen pounds in the ton, and would cost but about sixty-two cents. Apart from the insoluble matter the ashes would be as valuable as some of our patent fertilizers. —*AGRICOLA in Germantown Telegraph.*

## Necessity of Land Drainage in the County of Essex, C. W.

(From the *Essex Journal*.)

No County in this Province needs drainage more than the County of Essex, and when properly drained, no county could surpass us in our Agricultural productions. Our soil is most fertile, our climate very healthy, and the great drawback to our advancement and prosperity is the want of drainage. Thousands of acres of beautiful land are to-day immersed, which might be made productive of much good, and offer to emigrants, inducements unequalled in any other part of Canada. There is no trouble to find a market for all that can be produced, a railroad, and the Lakes and River Detroit, affording every facility for shipment.

In view of this subject, Mr. Weaver, Vice-President of our County Agricultural Society at its last meeting, said:

"In travelling through parts of this county,

I find a great deal of waste land and crops, for the want of proper drainage. The farmer both loses his time and seed in working his land, and loses his crops also.

I would move that every farmer make up a statement giving the amount of his crops lost through wet, or water lying on the land so long that it prevents him from working it; also stating whether it is practicable to drain the said land, and, if so, where to and what distance, whether to a known creek or gully, and through whose land, whether wild or occupied, and of what advantage it would be to the neighboring lands, if within his knowledge. Also, farmers who have ditched and drained their land, stating the advantage they have received by such drainage.

These communications to be sent to James Woodbridge, Secretary of the County Agricultural Society, so that they may be forwarded by the President to the County Council, for them to deal with as they may think best and proper, for I am really of opinion that there is from eight to nine per cent. of labor, seed and crops that are entirely lost to the farmer.

I hope these remarks will meet with the view of the Directors, for I really think that it is one of the first things that should come under the notice of this society. For Agricultural purposes, our county is second to none in the Province. We have the advantage of a water communication all round us, and a railroad in our centre, so that our farmers have no distance from their own door to seek a market for their produce, if the surface water is taken off, or that the roads may be passable."

## The Army Worm.

It may be recollected that among the wonderful characteristics which some writers, last year, asserted were possessed by the army worm was that of propagation while in the larva state. This of course was denied by all who understood the natural history of insects. The subject has been revived by a correspondent of the *Valley Farmer*, Mr. S. Washington. He states that in various examinations last year, he found small, white worms about an eighth of an inch in length, in the bodies of army worms—the numbers in each army worm varying from fifteen to fifty-four.

The editor of the *V. Farmer* submitted the statement to Mr. B. D. Walsh, of Illinois, a well-known entomologist, to whose writings in regard to the army worm we have frequently had occasion to refer. The point to which Mr. Walsh's attention was called, was, whether the worms found in the bodies of the army worms were of the species, and if not what they were. On this Mr. Walsh says:

"They were, beyond doubt, the larvæ or grubs of some species of ichneumon fly, whose habit it is to stick its eggs into the body of the



living army worm, with a long piercer which it has at the hind end of its body, and which a wise Providence has given it for the express purpose. These eggs hatch out, and the grubs proceed ing from them—which have no feet, because the Being that made them knows that in such a situation they have no need of feet—feed on the flesh of the army worm, avoiding the vital parts, but finally destroying it. They then eat their way out, spin a little cocoon of white silk like a grain of rye, only made smaller, inside which they change into the pupa state; and after a few weeks they make their third and final change into the imago or winged state, burst through the silken cocoon, and come out into the world in the form of four-winged flies, known to entomologists as ichneumon flies. Of the three kinds of ichneumon flies which I have myself bred from the army worm, one kind comes out as a general thing without wings—and in that state looks much like an ant or pismire. It may easily, however, be distinguished from an ant by its horns (or antennæ) not being flail shaped, or elbowed, as those of all ants are."

Mr. Walsh states that the popular idea of army worms being killed by the sun, is not well founded; that the dead worms which are found in situations supposed to justify this belief, are not killed by the sun, but by the ichneumon flies. He adds that the farmer, instead of being alarmed under the idea that the army worms propagate in the larva state, "ought to bless Heaven for sending into the world these tiny little flies, whose special mission it is to prevent the army worm from increasing beyond its appointed bounds. There can be no question that if it were not for the check which ichneumon flies and other parasitic insects form on the unlimited increase of plant-feeding insects, the world would soon become a desert."—*Boston Cultivator*.

### The Edinburgh Sewage Meadows.

A committee of the the House of Commons has been sitting some weeks on the subject of town sewage—on the possibility of turning it to agricultural account, and so of converting what is now a poison into a food. Much of the evidence taken has been based on an experience so limited as to render it untrustworthy as the foundation of any recommendation which the committee may be expected to make, and a good deal has been vague, not to say unsatisfactory. There has, nevertheless, for many years been ample experience of the agricultural value of town sewage on a large scale, and there has long been a sufficient body of concurrent evidence on the subject.

No committee was needed to make it known either that sewage is at present generally both mischievous and wasted, or that in some localities it has been profitably put to use; while in

others it has been made expensively harmless. Edinburgh, Glasgow, Ayr, Carlisle, Mansfield, Rugby, Leicester, Birmingham, Watford, Croydon—some for longer time than others—have most of them been known as the scene of great sewage operations and experiments. The collection of evidence from men whose experience of "town sewage" is derived from the waste of one household, and whose farm sewage includes the liquid manure of half-a-dozen beasts, can only impart uncertainty and doubt—if it all tends to belie the great facts with which most of us are already well acquainted.

What are the main grounds on which it is believed that town sewage can be turned to good account? Having lately visited Edinburgh, Glasgow, Ayr, Carlisle, Rugby, and Croydon, and walked over the ground thus manured, we are able to give the testimony on this question of an eyewitness as to those localities.

1. The streams which wash out Edinburgh are used for the irrigation of grass lands at Craighentinn, Lochend, Grange, besides certain meadows west of the town.

a. The meadows at Craighentinn lie to the N. E. of Edinburgh, at the foot of the valley which drains two thirds of the ground on which the town stands. They are 190 acres in extent, of which 40 acres or thereabouts lie close along the shore, a narrow strip between it and the coast railway. The land is for the most part a free soil—next the sea it is a light sand—in places inland it is stiffer. It is a fan-shaped plot; the water enters at the handle, and travelling along the outsides, is diverted to one or other of the "pares" between the outward artificial channels and the old water-course. It is let in pieces varying from a rod to an acre in extent, and has this spring fetched prices varying from £20 up to £41 10s. per imperial acre.

The sandy pieces next the sea let from £20 to £25 per acre, the inferior produce here being due partly perhaps to an original inferiority of soil, but chiefly, we imagine, that the water which pours over it has been used, all of it once, some of it twice before. At least half of the meadow is thus irrigated with tail water, and indeed it may be said that all of it is to some extent thus watered; for the Lochend meadows lie higher up the stream, and a quarter of the "Foul Burn" is diverted for use there, rejoining the main stream after having left much of its fertilizing contents behind.

The lighter portions of the land yield the earliest swathe and come quickest to the scythe again. We saw a swathe cutting on the 23rd of April, which must have weighed at least 10 tons per acre. There is, we believe, nothing elsewhere like it known to English agriculture. This great quantity is the result not of a very tall, but of a very thick growth. The blades of grass are not more than twelve to fourteen inches long, but they stand so thick and the

stem of each is so soft and succulent and large that the lower part of each is blanched, and the stubble left is white.

In a day or two, or immediately after the whole grass of any plot is taken away, the water is let on. The whole as to arrangement is a rough specimen of the ordinary ridge and furrow plan of irrigation, and the supply seemed to be ample according to the practice of the ordinary water meadow—forming a thin skin of flowing water, visible everywhere on the surface of the land. A stream 2 feet wide and 1 foot deep, running at the rate of a mile an hour, was in one place supplying what we judged to be an acre of the land. This corresponds to 10,000 cubic feet per hour, and as the supply is kept on foot for about five hours at a time, it is equal to from 12 to 14 hundred tons per acre for a dressing. Such a dressing is generally all that the plot receives until the next cutting; but as during the season of growth all the stream is kept in use, excepting at flood times,\* and all is watered in rotation, it may happen that another dose is available for the same land during the four to six weeks' interval which elapses before the swathe is again ready for the scythe. If there should be an opportunity of giving it a second dressing within three weeks or at least a fortnight, of that time, the opportunity is taken.

From three to five cuttings are taken during the year—the first is not the heaviest, and indeed the cow-feeders who hire the plots are tempted to take the earliest earlier than they should both for the sake of an early bite of grass and in order that a fifth swathe may be taken in October. Putting four cuttings as the average, and remembering the water is laid on to some extent during the winter season, it is not too much to estimate that every acre of the Craigentenny meadow receives 10,000 tons of sewage during the year. For this an average produce of at least £25 or 6-10ths of a penny a per ton may be obtained; and as this (half the meadow being watered with tail water) is obtained a second time, the whole worth extracted from the Edinburgh sewage here is rather more than 5 farthings per ton. As an additional illustration of the experience here, it may be supposed that the waste of 80,000 persons, probably imperfectly gathered however, is here utilised, and as the Lochend and Craigentenny lands amount to about 230 acres, that is at the rate of more than 300 persons per acre!

As to the cost of operation—taken in one view it is hardly anything; the sewage is obtained for nothing, the work of management does not cost more than 20s. a week at Lochend, and at Craigentenny it is managed by two men, and

probably costs under £100 a year. But if any company or new proprietary proposed to undertake the work, they could not purchase the apparatus (the estate) under £500, perhaps £600 per acre, which is two shillings or more for every ton of the swill which is turned to account upon the land.

b. The Lochend meadows lie above Craigentenny. About a quarter of the Foul Burn is diverted and sent along the narrow grassy valley over which it is here spread. The plot is about 30 acres in extent, of which one third may lie on the north-western side, about one hundred yards wide, sloping 1 in 25 or 30 towards the old water-course below; a quarter on the south-eastern side, a narrower strip, rather steeper; and the remainder is on the flat below. By reason of certain alterations upon the level of a main stream, the out-fall to the drainage of the last portion has been temporarily stopped, the effect of which is very visible upon the crop. The plots—half an acre to an acre each—into which the whole is divided have this year let for £18 10s and upwards on the flat, and for £25 up to £39 10s. on the sides. Drainage is an essential part of successful irrigation. Soil, as we are told by the intelligent superintendent here, is like man or any other animal; no nourishment of it is possible unless the food pass through it. You may present as much nutriment as you please to the surface, or the mouth, but in either case a stoppage is fatal. This is well seen at Lochend; patches of imperfect drainage, even on the steep sides of the valley, at once show the same defective growth, which is much more generally visible on the undrained flat at its foot.

Men and carts were busy removing a heavy swathe of grass on the 23rd of April. The grass is in many places, both here, and at Craigentenny, very weedy—full of crowfoot; but the cows eat it all with greediness; and it is, indeed, very probable that the bitter of the ranunculus may be a wholesome corrective of the extra succulence of the growth. Be that as it may, the whole is removed and carted, much of it to mles to the cowhouse. The price of the food thus purchased growing on the ground must be at least 10s. a ton. When sold by weight it varies from 6d. to even 1s. a cwt., according to the demand. And the price per acre forbids our imagining it to cost less than the lower of these prices on an average throughout the year. Mr. Taylor, the farm manager for Mr. Scott, who is the tenant of the Lochend estate, considers it of importance not to let the water on until the scythe wound has fairly healed; and some natural, unassisted growth of the stubble has taken place. It is thus a week or ten days after a cutting before it is irrigated. The water is, however, then let over from 24 to 48 hours at a time; and as it is apparently at the same rate per hour as at Craigentenny, 4 or

\* One man manages the distribution of the water, but he has an assistant, so that between them a watch night and day is kept especially for the diversion of a sudden flood, which is at once turned to waste; others are employed at busy times, and especially in cleaning out the water-carriers.



5 times as much water is thus put on; and taking the produce at the rate already stated, we do not suppose that a farthing per ton is here made of the sewage which passes over the land. This, however, for about a quarter of the stream, as already said, has to be added on to the sum already named as made at Craightenny.

Besides the 30 acres of natural meadow where the sewage is thus used, Mr. Scott has 10 acres of higher land close by, which he manages to irrigate jet-fashion by subterranean pipes and surface hose. The stream diverted from the north-western side runs, about 500 tons per hour, as we estimated it, along a channel by the upper edge of that side of the valley, and perhaps 10 or 12 f et above the channel below. A portion of it is taken over a water wheel, and this by a very simple arrangement of leverage and gearing, works four pumps, each delivering about one fifth of a cubic foot at a stroke, and making about 25 strokes per minute. These 20 cubic feet of water per minute, equal to 30 tons per hour, are delivered by Iron piping and hose at the rate of half an acre daily, or perhaps 600 to 800 tons per acre, over Italian ray-grass after each cutting. The land is an extremely light sand, with a deep sand-pit in the middle of it, and it is said that 30 tons per hour delivered in the ordinary way the ground in surface channels would sink so rapidly, that the whole surface could not thus be wetted evenly, and the apparatus of hose and jet is thus made necessary. This piece of Italian ray-grass is let in half acre plots like the meadow, and fetches £25 an acre. It is sown by hand at twice, about 3 or 3½ bushels per acre in early autumn, not watered until after the first cut in the following May, and then watered only gently and with caution, until the plant is fairly established. It is kept a second season, receiving then, as well as during the summer and autumn of the first year, a full allowance, and it is ploughed down in the autumn of the second year. A crop of early potatoes is taken in the third year, and the land is then again prepared for the seed.

c. The Grange meadows, the property of Sir J. Dick Linder, extend over about 20 acres, near Newington, a southern suburb of Edinburgh. The north side is watered from two streams, one of which is fouler than the other, and the grass is proportionably richer there. We saw on several plots a growth equal to any of Craightenny or Lochend, which had fetched close on £40 an acre. On the south side of the valley the surface is watered with clear water—not fouler than in any ordinary village stream—and the difference in the produce of the two sides is very remarkable. The rents obtained on that side vary from £12 to £15 per acre; on this from £25 to £40. The soil, as shown by market gardens close by, is a loose loam.

d. Let us now follow this grass home. Mr. Sanderson, a cow-keeper in Murray street, off

the East Cross Causeway, keeps 30 cows, chiefly short-horns. He has taken seven plots of meadow land for them on all the different meadows we have named, paying £100 for them. Two plots have been taken at £26 10s per acre each; one at £31, one at £38, and one at £27. two (being Italian ray-grass at Lochend) at £27 10s. We may suppose that he has thus secured 200 tons of green food, equal to rations for his cows during 160 to 180 days of summer. He finds it capital milk-producing food. Notwithstanding these enormous rents—notwithstanding a distance varying from ¼ to 3 miles of carriage—notwithstanding that he is extremely liable to loose the milk of his cows by the foot and mouth disease, and his cows themselves by pluro-pneumonia, yet we could learn that his business prospers. A cow may last a year, and be sold fat, or she may last two months and die—there is much loss and injury, owing to the place of these being filled by purchases in the market, where infection of either pluro-pneumonia or distemper monia is indigenous; but notwithstanding all these costs and risks, a living and a profit are made by cow-keeping. The management is as follows:—The cows receive about 1½ bushels apiece daily of “draff” from the distilleries—spent malt or “grains”, as we call it—they get this all year round, and from ¾ cwt. to 1 cwt. of grass daily during summer, and about 1 cwt. of turnips, partly steamed, during winter, with straw or fodder all the year round. In illustration of the cost of feeding, the price of the grass has been already named, the “draff” costs 3s. a quarter, the turnips from 15s. upward per ton at the railway station, the straw 3d. to 4d. a stone. The sales are, milk at 9d. to 10d. a gallon; cream at 8s. a gallon, and about £140 worth of dung annually (nearly £3 per cow), which is bought and carried away by neighbouring farmers.

These particulars, then, may suffice as an account of the Edinburgh sewage meadows. We did not see those on the west side of the town, except from the railway carriage—they appeared as full of grass and as busy with men and as busy with carts removing it (April 23rd) as the others. What has been already stated sufficiently represents the Edinburgh experience on the subject of town sewage. We have yet to refer to the experience of farm sewage near Glasgow and Ayr—to the southern experience of town sewage at Carlisle, Rugby, and Croydon—and to those particulars of ordinary farm experience which throw light on the subject.—*Gardiner's Chronicle*.

In one ton of cabbage there are 189 ounces of sand, 184 of salt (chloride of sodium), 279 of sulphuric acid, 156 of phosphoric acid, 72 of magnesia, 632 of lime, 208 of soda, 661 of potash.

## Agricultural Intelligence.

### Provincial and State Shows, 1862.

Upper Canada, at Toronto, September 22nd—26th.

Lower Canada, at Sherbrooke, 17th, 18th 19th September.

New York State, at Rochester, September 30 to October 3rd.

Illinois State, at Peoria, September 29 to October 4.

### Soiling Milch Cows.

A correspondent of the Irish Farmer's Gazette says:—"I keep a large number of milch cows, say from 90 to 100, which I house-feed all the year round; in winter on roots, &c., and in summer soiling them with ray-grass, clover, &c. I and my father before me, have followed this practice for the last forty years or more. It has also been our custom to give the soil cut fresh and fresh; that is to say, each feed is only cut a few hours before being given, except the early morning feed, which is cut the evening before, there not being time enough to cut it in the morning. Sunday's feeding has always been cut on that day, as the young grass, if cut the day previous, no matter what care is taken of it, would lose much of its succulent qualities, and be sure to become heated to a certain degree, and so throw the cows off their milk; as I need not tell you how small a change in their feeding will have effect on the milking qualities of cows. We once tried the experiment of cutting Sunday's feeding on Saturday, and the result was a considerable decrease in milk.

**YIELD OF GRAIN IN ENGLAND.**—The Mark Lane Express gives a table comprising the average yield per acre, of wheat, barley, oats, beans and peas, for thirty-eight counties, in England, prepared from returns received from correspondents of that paper. The average for the cereal grains mentioned is as follows:—

|        |                    |
|--------|--------------------|
| Wheat  | 29 bushels         |
| Barley | 37 $\frac{3}{4}$ " |
| Oats   | 46 $\frac{1}{2}$ " |

The lowest average of wheat in any county returned, is 22 $\frac{3}{4}$  bushels per acre, in Devonshire, and the highest 34 $\frac{1}{4}$  bushels in Lancashire. The lowest average of barley is 29 bushels per acre in Shropshire, and the highest 44 bushels, in Northampton. The lowest average of oats is 34 $\frac{3}{4}$  bushels, in Westmoreland, and the highest, 59 $\frac{1}{2}$ , in Cambridgeshire.

The beans mentioned are a kind not much cultivated in this country. The average yield is 32 $\frac{1}{2}$  bushels per acre. The average yield of peas is 30 bushels per acre.

**MICHIGAN STATE FAIR.**—It is announced that the next Annual Fair of the Michigan State Ag. Society will be held at Detroit, Sept. 23d to 25th inclusive—just one week before the New York State Fair. The Society has an able and efficient board of officers, and many enterprising and progressive members, and ought to make a better exhibition this year than ever before, notwithstanding the war. Officers: *President*—J. B. Crippen, Coldwater. *Treasurer*—Philo Parsons, Detroit. *Secretary*—B. F. Johnstone, Detroit. *Members of the Executive Committee*—T. T. Lyon, Plymouth, Wayne Co.; A. S. Berry, Adrian, Lenawee Co.; A. S. Welsh, Ypsilanti, Washtenaw Co.; Geo. M. Dewey, Flint, Genesee Co.; S. S. Bailey, Grand Rapids, Kent Co.; E. S. Moore, Tree Rivers, St. Joseph Co.; U. J. Baxter, Jonesville, Hillsdale Co.; Ira H. Butterfield, Utica, Macomb Co.—*Rural New Yorker*.

**THE CULTURE OF THE SUGAR BEET** is receiving considerable attention at the present time, particularly in the west. The Ohio State Board of Agriculture offers a premium of \$1,000 to the first person who shall have planted, within the State of Ohio, no less than five acres of sugar beets, and manufactured therefrom no less than 5,000 pounds of good, brown sugar, and a specimen of white sugar of not less than 20 pounds in a single uncompressed block.—*Rural N. Y.*

**THE LINDSAY Herald** says that the wheat in the County of Victoria has suffered severely from a grub of a greyish color. The grub not only eats down wheat, but also Indian corn, lettuce, and almost anything that is green. To the wheat crop however, it seems more destructive than to any other, and the damage threatens to be very serious. In Mariposa many farmers are rolling their wheat for the purpose of destroying them. The dry weather has occasioned their unusual depredations.

**CHEAP SUMMER FOOD FOR HOGS.**—The editor of the *New England Farmer* says he has practised the following plan for summer feeding of pigs for many years, and finds it to be an excellent one:—"A few rods of grass plot convenient to the pen is reserved for this purpose, and is mowed by the weekly suds from the wash-room. Commencing at one side of the plot, a large basket of the thick, short grass is mowed each morning while the dew is on, and a part given to the swine at each feeding, three times a day. By the time the last portion of the grass is cut, the first is ready to cut again, and in this way the ground is mowed over many times during the summer, while the grass is kept short, thick, tender and sweet. It keeps the hogs in a healthy, growing condition—they are fed with as much as they will eat every day, and little additional food is needed besides slops from the kitchen."



## Horticultural

### Horticultural Shows this Summer.

Peterborough Horticultural Society, at Peterborough, July 3rd.

Hamilton Horticultural Society, Second Exhibition, July 25th.

Kingston Electoral Division Society, Horticultural Show, at Kingston, July 2nd.

Toronto Horticultural Society, Second Exhibition, July 17th.

### Fruit Growers' Association of Upper Canada.

The next regular meeting of this association will be held at St. Catharines, on Wednesday the 16th day of July, and all gentlemen interested in the subject of fruit growing are invited to attend, and those gentlemen who can not make it convenient to be present will confer a favor by sending in to the Secretary, Mr. D. W. Beadle, at St. Catharines, their answers to the questions proposed by the association and published in the *Agriculturist* for 16th February, 1862.

The meeting will convene in the Town Hall, at 2 o'clock. P. M., and will be in part occupied in discussing and determining the varieties of cherries, plums, and goose-berries best suited to our climate. Members and others are requested to bring with them any specimens they may have of late strawberries, cherries, goose-berries, currants, raspberries, &c., &c. It is expected that there will be a full attendance, and the meeting unusually interesting.

### Apple Tree Borer.

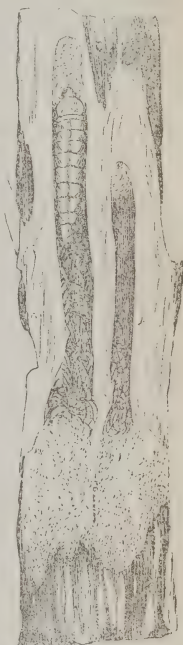
As this insect has occasionally produced very injurious effects on our apple trees in different sections of Canada, we subjoin a description of it from an article in the *Rural Annual* of 1860, and a communication in a recent number of *The Illinois State Agricultural Society*, which with the accompanying wood cuts will be found interesting to our readers.

THE APPLE TREE BORER.

(*Saperda Bivittata*.)

This insect is one of the worst enemies with which our apple trees have to contend. It is a yellowish, footless, cylindrical grub, the larva of a winged-beetle of the *Cerambycidae* family, which makes its appearance in June, and

deposits its eggs, one at a time, upon the bark near the surface of the earth. The maggot, when hatched, eats its way directly down into the bark, producing a discoloration where it is situated. Scraping off the outside bark, the last of August or early in September, so as to expose the white under bark which can be done without injury to the tree, will enable the young worm to be detected and destroyed. *Fitch* says of it: "the worm gradually works its way onward through the bark, increasing in size as it advances, till it reaches the sap-wood. Here it takes up its abode, feeding upon and consuming the soft wood, and forming a smooth, round, flat cavity the size of a dollar, or larger, immediately under the bark. It keeps its burrow clean by pushing its excrement out of a small crevice, or opening, through the bark. This excrement resembles new fine saw-dust, and enables us to readily detect the presence of the worm by the little heap of this substance which is accumulated on the ground, or covers the orifice of the hole out of which it is extruded." The worm when it is about half grown changes its habits, and the cavity, which it was so careful to keep clean and open, it now fills and obliterates, that it may not be discovered. It now confines itself to the heart wood, knowing a cylindrical retreat for itself, upward in the heart of the tree, as shown in the cut of a split section of a tree at this time. Here it lies dormant during the winter season, and in spring changes into a pupa, while still in its hole. From this the perfect insect soon after hatches, and, tearing away the saw-dust like powder which fills up the hole through which the worm originally cleared its burrow, it comes out of the tree. According to *Harris*, the larva state of this insect continues for two years. The tree becomes so weakened by the borer working through the wood, that it is easily blown down by the wind, or knocked down by stoek rubbing against it.



The Apple Tree Borer

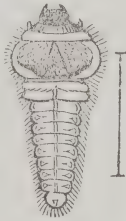
It now confines itself to the heart wood, knowing a cylindrical retreat for itself, upward in the heart of the tree, as shown in the cut of a split section of a tree at this time. Here it lies dormant during the winter season, and in spring changes into a pupa, while still in its hole. From this the perfect insect soon after hatches, and, tearing away the saw-dust like powder which fills up the hole through which the worm originally cleared its burrow, it comes out of the tree. According to *Harris*, the larva state of this insect continues for two years. The tree becomes so weakened by the borer working through the wood, that it is easily blown down by the wind, or knocked down by stoek rubbing against it.

The greatest preventative of the undue increase of this insect, is provided in the numerous woodpeckers which inhabit the country, especially the Downy woodpecker. These birds proclaim war to the knife against the borer, and are assiduous in seeking out and destroying it. In

regard to the remedies used by man, in this instance "an ounce of prevention is worth a pound of cure," and for this purpose alkaline preparations of suitable strength, such as soft soap, applied to the outer bark with a brush, are better than anything else. To kill the worm, Fitch recommends finding out, with an awl the top of the burrow, which will probably be not very far from the ground, cutting away the bark there with a pen knife, then scraping out the loose saw-dust and pouring in hot water from a tea-pot until you are certain, from its oozing out at the lower orifice, that the worm is dead. This operation will not hurt the tree in the least.

THE APPLE BUPRESTIS.—(*Chrysobothris femorata*.)

This is another insect, the larva of which has lately been discovered as a borer in our apple trees. The perfect insect is a shiny, blackish-green beetle, belonging to the order of Elaters, or Chick-beetles. It may be observed in June and July, running up and down the trunk and limbs of the tree. Fitch says: "It deposits its eggs on the bark, from which a worm hatches; this worm passes through the bark, and during the first periods of its life consumes the sap-wood, immediately under the bark."—When the worm has become strong, it excavates a burrow in the heart-wood, and makes a great wide hole in the interior of the tree, in which it remains torpid during the winter. In its habits, and mode of procedure, it closely resembles the apple tree borer, already described, and the same remedies that are used against the above borer will probably be found equally effectual with this one. It will be seen by the cut, that this worm differs considerably in appearance from that of the apple tree borer. It is soft and flesh-like, and of a yellowish colour, with a black head, and powerful jaws.



Apple Buprestis.

From the Journal of the Illinois State Agricultural Society.

### Apple Tree Borers.

MR. EDITOR: It is well known to entomologists that there are two distinct "borers" infesting the apple tree. The one in the *larva* or grub state is a whitish, hammer-headed fellow, looking as if he had been squeezed flat between two squares of glass; and in consequence of his front end being about twice as wide as it is high he bores a hole to suit the shape of his head—egg-shaped. The other in the *larva* state is a round or cylindrical whitish grub, and as his front end is round, he bores a *round* hole, not an *egg-shaped* one. He is also when full

grown nearly twice as big as the other chap; and consequently his hole is a good deal larger than that of the other. In the *perfect* or *beetle* state, the *FIRST* is about half an inch long, with rather short horns (or antennæ), and on a cursory view seems quite a brown, dingy affair. A closer inspection, however, will show, that his body above is marked with elegant brassy spots, and that underneath he is all glorious with brass and gold. In the *perfect* or *beetle* state, the *SECOND* insect is about an inch long, with very long antennæ, and he is of a cinnamon color, with two broad milk white stripes reaching all the way from his nose to his tail.

"But" some of your readers will say, "what is the use of knowing all this? What practical advantage is it to know, which of two insects, equally mischievous, and equally hateful, is destroying my orchard?" Not so fast my good friends. We will come to the "practical utility" part immediately.

The first or smaller insect which is a *Buprestis* attacks, as I know from my own experience, not only the trunk of apple trees, either at top, middle, or butt, but also small limbs, not over three-quarters of an inch in diameter. The second or larger insect, which is a *Saperda*, generally confines his attack to the *butt* of the trunk, pretty close to the ground. Instances are known indeed of his attacking the trunk in the crotch, or where it branches out into limbs, but such instances are rare, and generally occur only where the parent beetle finds the butts of all the trees pre-occupied, and so takes to the crotch for want of its favorite locality. Small as insects are, they know a great deal. For instance, they all know enough to make good provision for their future families, which is more than some two-legged bugs that wear coats and pantaloons always know. Now I stated in my essay on "Insects injurious to vegetation in Illinois," (printed in your transactions, vol. 4, p. 345) that Dr. Fitch, the state Entomologist of New York, had proved by a decisive experiment that a certain preventive against the attacks of the *Saperda*, or big round borer, was "to rub the bark of the trees with soap the latter part of May each year;" but that whether the soap was equally effectual against the little hammer-headed borer (or *Buprestis*) remained to be proved. I have a small garden in Rock Island about the size of a pocket handkerchief, in which I planted, some years ago, a dozen apple trees. In the spring of 1851 I dug out of these trees probably over a dozen borers of the hammer-headed headed kind, and having great faith in soap, about the last of May, 1861, I applied Dr. Fitch's preventive to all of them. To be plain and explicit, I took a bar of the newest and softest soap I could get (value ten cents,) and with this I thoroughly rubbed over all my trees, not only to the trunks, but also such limbs as were three-quarters of an inch through. The result this spring (1862) is, that



there is not a borer to be found in any of them and I give the facts, just as they are, to your readers for what they are worth. Of course, it would have been more satisfactory to have soaped half the trees, and left the other half unsoaped, as Dr. Fitch did; and then if the soaped trees had been free from borers and the unsoaped trees full of them, the proof would have been pretty conclusive. But Dr. Fitch is paid by the state of New York for conducting such experiments as these, and therefore can afford to make them; we western bug-hunters on the other hand, who have to foot our own bills, cannot afford to sacrifice our own private and peculiar apple trees for the benefit of the public.

Now for the "practical utility" part. Look at your apple trees, and see if you can dig any borers out of them, and what shape and size those borers are; and if not, see if you can see the holes where the insects have formerly eaten their way out. If the holes are oval and rather small, say the 3-16ths of an inch, and not confined to the butt of the trunk, you may know it is the *Buprestis*; if the holes are larger, and say the size of a smallish pea, and found exclusively in the butt, you may know it as the *Saperda*.

In the former case, if you have faith, as I have, in the "soap remedy," you must soap not only the trunk of the trees, but the small limbs; in the latter case it is sufficient to soap the trunk, and if you are driven for time and soap is dear with you, probably it would answer to soap the crotch and the butt end of the trunk alone. *A word to the wise is sufficient.*

BENJ. D. WALSH.

### Improvement of Grounds.

The following valuable article on a subject of great interest to all who own the soil on which they live, whether in country or village, is by A. J. DOWNING:

"Pleasure and profit are certain, sooner or later, to awaken a large portion of our countrymen to the advantages of improving their own private grounds. But we find it is only under two conditions that many public improvements are carried on. The first, is when nearly the whole of the population enjoy the advantages of education, as in New England. The second, is when a few of the more spirited and intelligent of the citizens move the rest by taking the burden in the beginning upon their own shoulders by setting the example themselves, and by most zealously urging all others to follow.

"The villages of New England, looking at their sylvan charms, are as beautiful as any in the world. Their architecture is simple and unpretending—often, indeed, meagre and unworthy of notice. The houses are surrounded by enclosures full of trees and shrubs, with space enough to afford comfort, and ornament enough

to denote taste. But the main street of the village is an avenue of elms, positively delightful to behold. Always wide, the over-arching boughs form an aisle more grand and beautiful than that of any old gothic cathedral. Not content, indeed, with one avenue, some of these villages have, in their wide, single street, three lines of trees, forming a double avenue, of which any grand old palace abroad might well be proud. Would that those of our readers whose souls are callous to the charms of the lights and shadows that bedeck these bewitching rural towns and villages, would forthwith set out on a pilgrimage to such places as Northampton, Springfield, New Haven, Pittsfield, Stockbridge, Woodbury, and the like.

"When we contrast with these lovely resting places for the eye, embowered in avenues of Elms, gracefully drooping like fountains of falling water, or Sugar Maples swelling and towering up like finely formed antique vases, some of the uncared for towns and villages in our own State, we are almost forced to believe that the famous common schools of New England teach the aesthetics of art, and that the beauty of shade trees is the care of especial professorships. Homer and Virgil, Cicero, Manlius, and Tully, shades of the great Greeks and Romans!—our citizens have named towns after you, but the places that bear your names scarcely hold leafy trees enough to renew the fading laurels round your heads!—while the direct descendants of stern Puritans, who had a holy horror of things ornamental, who cropped their hair, and made penalties for indulgences in fine linen, live in villages overshadowed by the very spirit of rural elegance!

"It is neither from a want of means, or want of time, or any ignorance of what is essential to the beauty of body or of mind, that we see this neglect of the public becomingness. There are numbers of houses in all these villages, that boast their pianos, while the last Paris fashions are worn in the parlors, and the freshest periodical literature of both sides of the Atlantic fills the center tables. But while the comfort and good looks of the individual are sufficiently cared for, the comfort and good looks of the town are sadly neglected. Our education here stops short of New England. We are slow to feel that the character of the inhabitants is always, in some degree, indicated by the appearance of the town. It is, unluckily, no one's especial business to ornament the streets. No one feels it a reproach to himself, that verdure and beauty do not hang, like rich curtains, over the street in which he lives. And thus a whole village or town goes on from year to year, in a shameless state of public nudity and neglect, because no one feels it his particular duty to persuade his neighbors to join him in making the town in which he lives a gem of rural beauty, instead of a sorry collection of uninteresting houses."

### Fruit Trees in the West,

The *Wisconsin Argus*, with the text, "the failure of Fruit Trees," discusses the question of fruit growing in the West as follows :

It is notorious that, in this State, most varieties of apple trees, after growing finely for a few years, just as they begin to bear, begin to die ; and after lingering two or three years, perish entirely. This mortality is, we believe, confined to the grafted trees. The defection commences in the *body* of the tree at various points, but most usually near the lower branches, and spreads in both directions, till the main branches, one after another, are deprived of nourishment and die.

Various remedies have been tried, the most successful of which is similar to the one devised by a certain wight for keeping the squirrels from destroying the corn: He had noticed that they always took the *outside row*, and his plan was not to have any outside row ! As the disease affects the *body* of the tree, the remedy is, *not to have any body*, but let the limbs come out as near the ground as they will—within two or three feet at the farthest. It is well known that trees of the same variety, thus grown, will succeed and live, while those trimmed up for a long body will die.

It is difficult to understand what can cause the difference, unless it be that low branches keep the short trunk shaded and less exposed to extreme variations of the temperature. This explanation receives confirmation from two considerations, viz: the defection always takes place upon the *south-west side* of the trunk ; and that is the side exposed to the sharpest cold in the winter and the most scorching heat in the summer. If we have here a clue to the cause of the difficulty, the question arises whether the disease is produced by the piercing south-west winds in the winter, or the scorching afternoon suns in the summer, or from the alternating extremes of the two. A little range of observation may aid our conjectures upon this point.

Upon the island of Mackinaw we have seen apple trees, of considerable age and in full bearing, remain sound and healthy, though as to the varieties we could not speak with certainty.—This would indicate that it is not the *cold* which does the mischief.

In South Carolina, Georgia and Alabama, peach trees, if left unprotected, perish precisely in the same way that apple trees do in Wisconsin. The bark dies, the wood cracks open, and the whole south-west side perishes, and the defection works round till there is nothing but a narrow strip of life left upon the north-east side ; and this soon yields to the influence of the dead portions of the tree. The destruction of the peach tree in those regions is well known to be caused by the intense heat of the sun in the after part of the day ; and the remedy

there is, to take a piece of board, about eight inches wide, and long enough to reach from the ground to the limbs ; sharpen one end, and drive it into the ground, leaving it to stand within six or eight inches of the body of the tree on the south-west side. In well managed peach orchards in those States, every tree is protected in this way ; and whenever one is neglected, it presents exactly the appearance of a half dead apple tree in Wisconsin ; while trees thus protected, remain sound and healthy.

It is affirmed by some intelligent fruit growers in Wisconsin, who have paid much attention to the subject, that there are varieties of choice grafted fruit that will stand the climate ; but we do not consider this fully demonstrated, and would suggest the simple precaution practised by our Southern brethren with their peach trees. A dime's worth of lumber will protect a tree for several years."

### Growing Double Flowers.

We cannot explain all that a correspondent would like to know about Double Flowers—why they become double, &c.; nor can we tell from the appearance of a seed whether it will produce double or single flowers. It seems to be admitted, generally, that seeds that have been kept a number of years, will produce more double flowers than if sown the first season. In this opinion our correspondent is supported by good authority, yet we have always doubted whether there is any good reason for the belief. On this subject we give an extract from a volume of the *Revue Horticole* :

"It is impossible for any inquiring mind not to attempt an explanation of the fact that many plants which, in a state of nature, never present more than a single row of petals, begin to assume several rows under continued cultivation. The effects of a richer soil, and other genial circumstances, or the mere accident of double petals in one plant, transmitted with improvement through its progeny, are the common explanations ; and they are generally received as satisfactory, without reflecting that what we call accident is itself a result of some cause, and that change of condition must attack some physiological principle before it can have any effect in modifying the character of a plant. Nothing is now so common as double flowers ; and to explain the phenomenon, we must make practice agree with theory. Every gardener who sows seed wishes to obtain plants with double flowers, so as to have blossoms which produce the greatest effect. Every double flower is a monstrous vegetable. To produce this anomaly, we must attack the principle of its creation—that is to say, the seed. This being granted, let us examine in what way these seeds ought



to be treated. If, after having gathered the seeds of Tenweeks' Stock, for example, we sow them immediately, the greater number of the seedlings will produce single flowers; while, on the contrary, if we preserve these same seeds for three or four years, and sow them, we shall find double flowers upon nearly all the plants. To explain this phenomenon we say, that in keeping a seed for several years we fatigue and weaken it, so that the energy which would otherwise have been expended in producing stamens, produces petals. Then, when we place it in a suitable soil, we change its natural state, and from a wild plant make it a cultivated one. What proves our position is, that plants in their wild state, shedding their seeds annually, and sowing them as soon as they fall to the ground, yet in a long succession of time scarcely ever produce plants with double flowers. We think, then, after what we have said, that whenever a gardener wishes to obtain double flowers, he ought not to sow the seeds till he has kept them for as long a time as possible. These principles are equally applicable to melons, and all plants of that family. We admit, like many observers, that melon plants, obtained from seeds the preceding year, ought to produce, and do produce, really very vigorous shoots, with much foliage; but very few fruitful flowers appear on such plants; while, on the other hand, when we sow old seed, we obtain an abundance of very large fruit. In fact, in all varieties of the melon, the seeds should always be kept from three to eight years before being sown, if we would obtain fine fruit and plenty of it."

We have kept Balsam and Tenweeks Stock seeds for ten years, sowing some every year, and we could not discover any improvement by age in any respect. Much more depends upon the manner in which the plant that produces the seed is grown than upon its age. The idea of the seed being fatigued or weakened by age so as to produce double flowers, seems to us very much like nonsense. What we want to produce good flowers, is short, stocky plants. If the plants become drawn when young, the flowers, as a general thing, will be worthless.—*Rural New Yorker*.

**RIBAND FLOWER BORDERS.**—The riband system is now very generally practised, and where a border admits of sufficient length and width, a most effective display may be created by planting, say—1st row, *Cerastium tomentosum*; 2d row, Purple Verbena; 3d row, Variegated Geraniums; 5th row, Bedding Dahlia, *Alba floribunda nana*, planted in a sloping position so as to keep it dwarf. Such a riband can be very much varied by using White Verbena, Blue Lobelia, purple Zelinda Dahlia, Yellow Calceolaria, and many other plants, always avoiding, if possible, bringing a bright scarlet and a yellow

close together. Very effective beds may be planted with Blue Ageratum, bordered with Lemon Calceolaria; Maroon, or Purple Verbena, with the Silver Cerastium; Yellow Calceolarias, with Cattels' Orange Scarlet Nasturtium, or *Gazania splendens*; Variegated Geraniums with Scarlet Geraniums, or *vice versa*; Blue Lobelia with the Silver Cerastium or Variegated Alysium; *Gazania splendens* with Blue Lobelia; White Verbena with Scarlet Verbena, or *vice versa*; Pink, Rose, Maroon, or Crimson Verbena; Alba Floribunda Dahlia with Purple Zelinda Dahlia; *Tropæolum Lobbianum elegans* with Silver Cerastium; Scarlet Geranium or Crystal Palace Scarlet Dahlia with Silver-Leafed Cineraria; Heliotrope with variegated Mint. In fact, so many different and pleasing arrangements may be made in regard to the plants named, that we do not consider it necessary to detail them here, as they will readily suggest themselves to those who bestow a few moments' thought on the subject. Bordering beds seldom answers, if the beds are very small. The border, to be effective, should be about one-third the diameter of the bed.—*Scottish Horticulturist*.

**STRAWBERRY CULTURE—STIRRING THE SOIL.**—At a late meeting of the Brooklyn Hort. Society, Mr. Fuller said that he had grown at the rate of 600 bushels per acre, on a small plot of the Bartlett strawberry, and by the same mode of treatment, 400 bushels of Triomphe-de-Gand. The best treatment I have ever given strawberries when grown in hills, was to stir the surface a little every day. Some varieties grow best in stools, the Wilson, for instance, and others do best when they all run together. I have great faith in lightly stirring the soil among strawberry plants. The best Delaware grape vines I ever grew I produced by stirring the soil regularly every Saturday evening, with a rake, and I believe it would pay to rake the ground among the strawberry plants every day, and cut off all the runners. I can grow strawberries by this process upon poor soil, without manure. I am satisfied that surface soil stirring is the most important of all modes of cultivation. But in a strawberry bed you must be careful not to dig too deep. There is no process that can be applied to the cultivation of cabbage and cauliflower, equal to stirring the surface every day."

**RENEWING PEACH TREES.**—Peaches are never borne twice on the same wood, but always on the new wood of the previous summer's growth; hence peach trees soon get beyond our reach, if not cut back, or "summer pruned." The bearing wood each year gets farther from the ground, until we only find a little fruit on the ends of the branches. Mine were in that condition in the spring of 1861, when, as the sudden cold snap of November, 1860, destroyed all the fruit

buds, so there would be no fruit for the trees to nourish in the summer of 1861, the growth of wood would be very great, and the trees still farther beyond control. To subdue them, I sawed them off about two feet from the ground, in April, and covered the wounds with gum shellac, (not a good article;) a mixture of one-third each of beeswax, rosin, and tallow is a much better covering. They all pushed out numerous shoots, which grew from 5 to 8 feet in length, and every twig is full of fruit buds, so that I have a good prospect of a crop the coming season, unless the mercury falls to 8 or 10 below zero, a degree of cold the peach blossom bud cannot stand in this section.

The conclusion arrived at is this: with the treatment named, (barring the excessive cold,) a crop of peaches can be obtained every year, by sawing down every other tree in the row, or alternate rows, every year. Let half the trees be producing wood and the other half fruit, and the following spring saw down those that had fruited.

Should the frost kill the fruit-buds, then saw all back to the stump again.

The method of cultivating low gives us control of the trees, to thin out fruit, cut back, or summer prune.—*J. C. Thompson in the Horticulturist.*

### The Cultivation of Wild Flowers.

Those who wish to cultivate flowers, yet cannot well afford to purchase them, and others, also, who would add some native growing varieties to their fine parterres of rare and important plants, may find in our woods and fields many beautiful kinds well worthy of removal and careful cultivation. Foremost of these in simple loveliness, are the white, blue, and yellow Violets; they are readily transplanted, and when arranged in large beds or borders, are exceedingly effective, growing much larger and longer-stemmed under garden culture, than in their native haunts.—Then, there are the Anemones, with their tender white or pinkish flowers, threaded with crimson. These, also, grow finely in large patches, and may be transplanted either in the spring or early autumn. The writer has succeeded in transplanting many kinds of wild flowers, even while they were in full bloom, by keeping them well watered and carefully shaded for the first ten days.

For extreme richness of colour, the Scarlet Lobelia (*Lobelia cardinalis*) is unequalled. This is very easily cultivated, and, under the gardener's care, throws out its vivid flowers in grateful profusion. The native Asters are susceptible of great improvement under garden culture. Then there are the Gentians, the wild Honeysuckle, and the Climbing Cle-

matic, all hardy and graceful; and, among shrubs, the Laurel with its waxen clusters peering from branches of glossy green—the most exquisitely-wrought of all the wild flowers.

The Lilies, Lupins, Sweet Briars, Geraniums, Iris and Hepaticas, are well worthy of a place in the flower garden. The Dragon Root (*Arum triphyllum*) is extremely graceful, and grown in large patches, as the writer has seen it, has the effect of some rare tropical plant. The Yellow Snakeleaf or *Erythronium*, is very pretty with its long green leaves, spotted with red, and its delicate bell-shaped flowers, and in many localities is the earliest vernal flower we have. Like most wild flowers, it requires to be kept very moist when first transplanted, and completely shaded from the sun's rays.

The list given above, of wild flowers susceptible of garden cultivation, is necessarily incomplete—their name is legion—and in no book yet written, can a complete catalogue of Nature's floral treasures be found. On her own glowing page, lying invitingly open to the hand and eye of man, each may find for himself an endless variety; and by observing the habits and localities of the various kinds, there need be no difficulty in adapting soil and treatment to their wants. Some are found nestling deep in the shadow in the wood, some, more light-loving, cluster in the fields and along the roadside; some love the ponds and brooks, and bloom amid the tall grass on the banks, and some climb the mountain side and hang their graceful festoons across the jagged rocks. In each and all there is beauty, and Nature, in her prodigality and consciousness, will not begrudge us a few to nurse and tend in our gardens. We can never make them appear half as beautiful as they do in their original surroundings—for the Gentian on our faultless trellis, fuller in its flower, and richer in its dye, is still but the city sister of the blue-eyed Gentian, climbing up the rocks—but we can turn them into very respectable garden flowers, "improved" and "double," if we wish—and certainly we will find them well worth the trouble.—*Working Farmer.*

ROSE LEAF PICTURE FRAME.—A writer in *The Home and Garden* thus describes how to make a pretty, ornamental style of picture frames:—"The leaves of the multiflora or climbing rose, are best suited for this purpose, as they have a greater richness and variety of colour than most of the rose family. At the time when there is the greatest variety of coloured leaves, strip them from the bush, and put them to press in any old book you do not wish to use; change them as often as every other day, until sufficiently dried; then take any picture you wish—an engraving is gener-



ally used—fasten it on to a paste-board, and leave a margin of the width you wish for your frame, outside the engraving. Sew the leaves on to the paste-board frame, either in knots or groups, or simply overlapping each other, and varnish with furniture varnish. When dry, suspend with cord and tassels, and you have a very pretty picture-frame." Other leaves of variegated colours, as maples, &c., or several sorts showing different shades of green, may be used in the same manner.—*American Agriculturist*.

### Indoor Gardening.

One of the prettiest ways of having flowers in rooms is perhaps the fashion of little hanging baskets. In flower stands and on tables, and even in boxes, it is often difficult to arrange climbers nicely; they either require height in the way of trellises, which we find it hard to give, or they droop down in an ungraceful fashion. In the use of hanging baskets neither of these things happen. The climbers may if they like twine up the wires or cord, or they may still more prettily droop down over the basket. One of the prettiest things for this is the little *Campanula*, its bright blue flowers trail down neatly and yet closely into a lovely carpet, and if in the midst we place a pretty fern, its fronds wave over and make quite a perfect centre. I was told the other day that the *Adiantum cuneatum*, one of the very loveliest sorts of Maiden Hair, did well for such a purpose, and this would be, I think, the prettiest kind to try; although it is a stove fern it has been kept for years in a room window, and, in fact, it seems one of the most easy of its class to manage.

The wild pink geranium is another delightful and very aromatic basket plant, and the little blue *Lobelia* and the beautiful *Torenia asiatica* are also amongst those which droop down gracefully and show their beautiful blue flowers.

In arranging these baskets the grand thing, I think, is to give enough drainage. I always put broken charcoal, covered with a thin layer of moss, adding afterwards the soil that the plants require, and the charcoal occupying a space of perhaps 2 inches, a little water generally collects there. Any one used to watering these baskets soon comes to know by weight if they are dry or wet; and if by any chance one morning the soil should seem still moist, the daily watering ought to be then omitted.

Common black hair-pins are excellent pegs to use for fastening down the runners of creeping things, when we want not to show a quantity of sticks, and for tying up window plants the narrow dark green ribbon often used for book marks is the best and neatest substitute for bass when a thin stripe of it is not found suitable. I have often tried tying up plants with worsted, but

that holds water too much and is also untidy looking, and threads of netting silk, though invaluable for trainers (on which the plants twine themselves), are too apt to cut the stems to be safe for tying.

Any baskets that are to be hung up ought to be fitted with an inner lining to contain the roots, and this should be surrounded by something calculated to prevent over dryness to it. I do not generally like wire stands for plants; but when they are used, and when some means is found of protecting the pots sufficiently, they may be made really beautiful by pink and white and blue *Ipomœas* climbing all about them. The different varieties of *Quomoclit* I think are the best to use for this, with the exceedingly pretty "rubro-cœrulea," which I have often grown, and consider a charming annual. It will not, however, bear a great deal of sun, and is especially injured by the hot summer rays striking upon the stem or collar when it is exposed. In placing it in a window box I therefore always manage to have some plant in front of it to give a little shelter. *Mignonette* thus proves a capital foster nurse to a great many plants.

The wire stand that I had last year was one of those in steps—three on each side, and a wide shelf beneath. Very green and spreading *Ipomœas* were placed in the lower steps, roses, or geraniums, or fuchsias, in the others, and two or three more *Ipomœas* with *mignonette* below. The leaves and tendrils entwined themselves most gracefully round every wire, and ran round every edge, while the varied flowers that opened every morning and closed up at night looked extremely gay. Each of these pots of climbers contained several plants—the pots were 32's and the soil leaf mould. They required generally very abundant watering at the roots; indeed, a day's dryness at any time caused some of the leaves to assume a yellow and faded look.—*E. A. M., in Gardener's Chronicle*.

### Domestic.

#### Approved Domestic Receipts.

\* GINGERBREADS, PIES, JELLIES, &c.

*Soft Molasses Gingerbread*.—Mix with a pint of molasses, a teacup of melted butter, a pint of flour, 2 eggs well beaten, spoonful of ginger dissolved in a tumbler of milk, and stir in 2 teaspoonsful of saleratus; add flour to make it stiff as pound cake; bake half an hour.

*Hard Gingerbread No. 1*.—Rub half a pound of butter into a pound of flour, then rub in half a pound of sugar, 2 teaspoonsful ginger, 1 spoonful rose water; mix it well, roll out, bake in flat pans in a moderate oven half an hour.

*Hard Gingerbread No. 2*.— $3\frac{1}{4}$  lbs sugar, 2 lbs flour, 3 eggs, half pound butter, 1 teaspoonful saleratus, 2 spoonfuls ginger or nutmeg, wet with half cup of milk.

**Circle Gingerbread.** 2 cups of milk, (sour if you like), a cup of molasses, 1 of sugar, 1 of butter, 2 eggs, 5 heaping teaspoonsful of saleratus, flour enough to make it stiff as pound cake, essence lemon, and nutmeg.

**Hard Gingerbread.** 1 cup of butter, 1 of sugar, 3 eggs, 1 nutmeg, or ginger, a small teaspoonful of saleratus dissolved in a little milk; as little flour as will roll it out well.

**Alum Gingerbread.** 1 cup molasses, 1 of milk, half cup butter, 1 teaspoonful alum, 2 of soda, large spoonful ginger, flour enough to roll out, bake in sheets.

**Good Gingerbread.** 1 cup molasses, 1 of milk or water, 2 eggs, half cup butter, 1 teaspoonful saleratus, 1 of cream tartar, nutmeg or spice to taste.

**Gingerbread.**—1 cup sugar, 1 of molasses, half cup of milk, 1 cup butter, 2 eggs,  $3\frac{1}{2}$  cups of flour, half teaspoonful of saleratus, ginger to to your taste.

**Sugar Gingerbread.**—2 cups sugar, 1 of butter, 1 of milk, 1 egg, 1 tablespoonful of ginger, 1 teaspoonful of saleratus, flour enough to roll.

**Gingerbread.**—2 cups molasses, 1 of butter, 2 eggs, 1 cup sweet milk, 5 cups flour, 2 teaspoonfuls soda, 1 teaspoonful ginger.

**Molasses Gingerbread.**—1 cup molasses, 1 cup milk, 2 eggs, butter size of an egg, 1 spoonful of saleratus, flour and spice.

**Sugar Gingerbread.** 1 cup butter, 2 cups sugar, half cup boiling water, tablespoonful ginger, 1 of saleratus.

**Muffins.** 1 pint of warm water, 1 egg, half cup sugar, half cup of yeast, half teaspoonful saleratus, a little salt, flour enough to make a stiff batter; mix at noon and fry in morning.

**Muffins.** 4 cups of flour, 2 of milk, 1 egg, 2 tablespoonfuls of sugar, 2 teaspoonfuls cream tartar, 1 of soda; bake in a quick oven.

**Muffins.** 1 pint of milk, 1 pound of flour, 3 eggs, half cup yeast.

**Doughnuts.** 2 cups white sugar, 3 eggs, 2 cups milk or water, piece of butter size of an egg, 1 teaspoonful cream tartar, 1 of saleratus, 1 nutmeg, a little allspice.

**Doughnuts.** 2 cups sugar,  $1\frac{1}{2}$  cup milk, 3 eggs, 1 teaspoonful saleratus, piece of butter size of a hen's egg; roll very soft.

**Doughnuts.** 1 cup of sugar,  $1\frac{1}{2}$  of milk, 1 egg, small piece of butter, 2 teaspoonfuls cream tartar, 1 teaspoonful soda, spice to taste.

**Doughnuts.** 2 cups of sugar, 1 cup butter,  $1\frac{1}{2}$  cups sour milk, 5 eggs, half cup sweet milk, one teaspoonful of saleratus.

**Buckwheat Cakes.** Mix one quart of buckwheat flour with 1 pint of lukewarm milk or water, half cup of yeast, and set it in a warm place to rise. When light, which will be in eight or ten hours, add 1 teaspoonful of salt, and if sour, 1 teaspoonful saleratus dissolved in a little milk; if too thick, thin them with just

sufficient cold milk or water; fry in enough fat to prevent sticking to the pan.

**Little Plum Cakes that keep long.** 1 pound flour, mix with 6 ounces sugar, beat 6 ounces butter to a cream, add 3 eggs well beaten, half pound currants, the plums and sugar; beat all half an hour, then drop the butter on tins or buttered paper size of a walnut; bake in a brisk oven.

**Rye Drop Cake.** 1 pint of milk, 3 eggs, 1 tablespoonful sugar, little salt, stir in rye flour till it is as thick as pan cakes. Bake in buttered cups or saucers half an hour.

**Mince Pies.** 3 pounds chopped meat and suet, 6lbs. chopped apple, 1 lb. raisins, little more than 1 quart molasses, more than 1 quart cider, 1 cup spices.

**Lemon Pie.** 2 lemons, 3 crackers, 2 eggs, 3 cups sugar, 1 of water, small piece of butter. This will make three medium sized pies.

**Lemon Pie No. 1.** 4 lemons grated, all but the rind of two, 3 cups sugar, 3 eggs, all beaten together will make three pies.

**Lemon Pie No. 2.** The juice of 1 lemon, 1 pounded cracker, 1 cup sugar,  $2\frac{1}{2}$  cups water.

**Lemon Pie No. 3.** 1 lemon,  $1\frac{1}{2}$  cup sugar, 2 eggs, 2 spoonfuls cream, 1 cup flour.

**Lemon Pie.** 1 lemon, 2 eggs, 2 spoonfuls cream, 1 spoonful flour,  $1\frac{1}{2}$  cups sugar.

**Nice Dish for Breakfast.** Beat 1 egg, add one teaspoonful salt, pour in about two-thirds of a pint of water, slice some bread, dip it in, and fry in a little butter. Serve warm.

**Brown Bread, or Togos Cake.** 3 cups Indian meal, 1 of flour, 3 of sweet milk, 1 of sour milk, half cup molasses, small teaspoonful soda, steam three hours, (bake 20 minutes;) half teaspoonful of ginger improves it.

**Brown Bread.** 1 cup sour milk,  $3\frac{1}{2}$  cups of meal, 1 of rye, 1 of molasses, 3 of sweet milk, 1 teaspoonful salt, 1 of saleratus. If large cups, steam 4 hours and bake 2.

**Icing for Cake.** White of 1 egg, 9 teaspoonfuls sugar, 1 of starch.

**Ginger Snaps.** 1 cup butter, 2 of sugar, half cup milk, (sour if you have it,) 1 teaspoonful ginger, half teaspoonful soda.

**Cookies.** 1 cup of butter,  $1\frac{1}{2}$  of sugar, 4 eggs,  $2\frac{1}{2}$  cups of milk, 1 teaspoonful saleratus; melt butter, put the sugar to it; do not beat the eggs.

**Kisses.** Half pound of sugar and the whites of four eggs, beat to a froth, mixed and flavored with rose; put in the oven on a board covered with white paper, drop with a teaspoon on the paper and bake light brown, then slip them off with a knife, and stick two together.

**Charlotte Russe.** Half box gelatine; dissolve in 1 coffee cup of milk; cooled, add 1 pint



of cream, whites of seven eggs, beat to a hard froth, 1 cup sugar; line the mould with sponge cake, pour in the jelly, set away to cool; when served, turn on to a flat dish—vanilla.

**Italian Cream.** Take 3 pints of milk or cream, sweeten it with white sugar, flavor with vanilla or lemon. add 1 paper of gelatine; stir constantly until it boils; beat well the yolks of 8 eggs, stir them well into the boiling cream, strain into moulds, stand on ice 5 or 6 hours; to be served with cream and sugar.

**Yeast.** 3 potatoes, washed clean and put into 1 quart of water, with half a pint of dry hops, boil together till the potatoes are done then peel and wash; one third of a cup of salt, half cup sugar,  $1\frac{1}{2}$  cup flour, mix with the potatoes, strain the hops when hot upon the above—strain the whole through a calender, when milk-warm, add a cupful of yeast, and put to rise, after which put down cellar; to 1 quart of water two-thirds of a cup of yeast is suitable to raise bread.

**Potato Yeast.** Take 6 good sized potatoes, boil them in 2 quarts of water; when well done, take them out and mash them fine. Then put them back into the water, and add a handful of hops. When well boiled, strain it through a sieve into a little thickening, a tablespoonful of flour, a cup of sugar, half cup of salt; if you mix the bread with water a little shortening will improve it; if you use milk, it is not necessary.

**Wine Jelly.** To one-half of a 25 cent box of gelatine add 1 pint of cold water. the rind of 1 lemon cut, not grated, juice of 2 lemons; let it stand for an hour and a quarter, take out the lemon rind and add a little less than  $1\frac{1}{2}$  pint of boiling water,  $1\frac{1}{4}$  lbs. sugar, a good half pint of wine, then pour into moulds; straining is hardly necessary; stiff in 4 or 5 hours.

**Wine Jelly.** 1 box of gelatine,  $1\frac{1}{2}$  pint boiling water, 1 pint sugar, 1 stick cinnamon, 1 lemon, 1 pint of wine; stir the ingredients together and then strain it.

**Currant Jelly without Boiling.** Squeeze the currants through a thin cloth, take a pound of sugar to a pound of juice, rub sugar into juice with hands, set it in the sun 2 or 3 days.

**Currant Jelly.** Wash the currants, then squeeze them through a thin cloth; to 1 pint of juice add 1 pound of sugar; heat the juice well, then put in the sugar and boil about 15 minutes; strain and put in cups.

**Apple Jelly.** Quarter the best quality of apples and stew till soft; strain out the juice, boil it to the consistency of molasses, then weigh it and add as many pounds of crushed sugar, stirring it constantly till the sugar is dissolved; add 1 ounce of extract of lemon, to every 20 pounds of jelly; when cold set it away in close jars; it will keep good for years.

**Crullers.** Dissolve a teaspoonful of saleratus in four tablespoonfuls milk, or leave out one spoonful of milk and substitute one of wine; strain it in o half a pint of flour, 4 tablespoonfuls melted butter or lard, and a teaspoonful of salt; beat 4 eggs with 6 heaping tablespoonfuls of rolled sugar; work them into the rest of the ingredients, together with a grated nutmeg; add flour to make them stiff enough to roll out easily—about an inch thick.

**Crullers.** 4 eggs, 3 cups sugar, butter the size of an egg, 4 large spoons of milk, 1 salt spoonful saleratus, nutmeg or lemon, salt; roll out hard.

**Sauce.** 2 eggs well beaten, 9 teaspoonfuls sugar, a little butter and flour; pour boiling water upon it; butter and flour together; sugar and eggs together.—*Mvine Farmer.*

### Recipes for Hard and Soft Soap.

A correspondent in the *German town Telegraph* offers the following recipe as one to be perfectly relied on:

Take ten pounds of soda ash, and dissolve it in twenty gallons of soda water, with twelve pounds of fresh lime and three-fourths of a pound of rosin, by boiling them all half an hour, stirring the while to keep them from setting or burning; then pour all the contents into a tub to settle, washing your kettle clean. After these contents have settled, take the clear water that comes on the top and put it in the kettle; now hunt up all your fat and skins till you get about twenty-three pounds—if clear fat not quite so much—put over the fire to boil till all the fat is eaten up; perhaps it will take two hours, or not nearly so long; then take fine salt to divide, and add salt till the hard soap comes on the top. It will at first look like froth, and the waste will look very dark in the bottom of the kettle. Pour all out in a tub. I forgot to say, fill up your tub with cold water after taking on the first clear lye, ready to boil your soap froth with the second time; put two good bucketsfull of this clear lye in the kettle, then with an iron ladle take all this soap froth off the top of the tub and put it in with these two buckets of lye-water, to boil again a few minutes, to make your hard soap clear and nice, adding salt till it separates well. Then pour all over in a tub, to remain undisturbed over night. In the morning you will have over thirty pounds of as white soap as you will wish, for either washing or toilet use, which will not chap the hands at any time. Again, if you would wish a half barrel of nice white soft soap, fill up this said lime tub again with cold water till it settles, then take the hard soap that sticks to the kettle and the pitcher that you dip out with, and three or fourth ladles full of your hard soap, with two pitchers full of this lye-water, and let it boil a

few minutes till it looks like soap, then fill up your kettle nearly full of the lye-water, and let boil a few minutes, then pour it into a vessel, and you will be much pleased with the result of your labor. This soft soap will be thick and solid, and it is very nice for boiling clothes or washing as it makes a very nice froth.

In order to have plenty of soap fat, you must begin at the beginning to save all the skins of meat, and all the fat scraps that come from your table, which in warm weather, should be put in some of this clear lye until you get enough to make some soap. By this course, in an ordinary family, you will always have enough soap without buying.

### Killing Rats—A Novel Trap.

The premises of a good many farmers are often infested with rats, and we are often asked for modes of destruction. A resident of Brooklyn is vexed with an increasing family of rats that seem to grow fat on arsenic and rat exterminators. He doesn't like rats, and refers his case to the *Sunday Times*. That journal recommends a trap made as follows:

"Take a mackerel barrel, for instance, and fill it to about one-third its height with water. Then place a log endwise in the water, so that one end of it will just remain above the surface. Make the head of the barrel a little too small to fit, and suspend it by two pins to the inside of the top of the barrel, so it will hang as if on a pivot and easily tip by touching either side. On this head, thus suspended, secure a piece of savory meat. The first rat that scents it, will, to get the meat, leap on the barrel head. The head will tip, or tilt, and precipitate him into the water, and resume its former position. The rat in the water will swim to the log, get on the end of it, and squeal vociferously. His cries will bring other rats, all of whom will be tilted into the water, and all of whom will fight for the only dry spot in it—viz., the end of the log. As only one rat can hold it, the victor will drown all the rest, and can, in the morning be drowned himself. We have seen twenty rats caught in one night by such a trick.

**How to Cook Eggs in the Shell.**—A correspondent of the *Agriculturist* writes:

One way to cook eggs is to drop them into boiling water, and let them remain there three minutes—the water all the time boiling. This hardens the white next the shell to almost leathery toughness, while within it is still not cooked. Another and preferable mode is, to pour boiling water upon the eggs; let them stand five minutes; pour off this, and add more boiling water, and immediately bring them to the table in the water. Those taken out at once will be somewhat cooked through; and those left in five minutes will be "hard boiled," or nearly so, and thus the taste of every one may be suited, and no toughness of the whites be observed.

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Sore Shins.

This is a disease affecting both the fore and hind shank bones of horses, and of most common occurrence in race-horses. It arises from inflammation set up in the periosteum or covering of bone, and as a consequence there is an effusion of the lymph between the bone and periosteum, also on the surface of this membrane. A diffused tender swelling rises on the front of the shank bone, by-and-by ulcers form on the skin from which matter freely exudes. The outer surface of the bone dies, shells off and comes away in small pieces, and if recovery takes place new bone forms underneath.

The reason that this disease most commonly occurs in well bred fast young horses, can be accounted for thus:—For instance a young thorough-bred horse is frequently put into training when two years old. Perhaps he may be of a weak constitution, and the bones at this period in a growing state, and not sufficiently consolidated and therefore not adapted to the wear and tear to which they are subjected. The consequence is, inflammation is set up, which leads to all those results.

In treating sore shins the great object is to give the animal rest, apply poultices, and administer a dose of laxative medicine. After some time cold applications are useful, and a blister may be applied; but before blisters are had recourse to all inflammation must be subdued.

### A Substance to supply the partial loss of Hoof.

(Translated from the French for the Veterinarian.)

Accidental breaches and loss of hoof in the horse being not only unsightly, but also causes which render shoeing unsafe, and prevent the horse from doing his usual work. M. Defays has endeavored to discover a substance that will not only conceal these defects, but be of such solidity as to bear the nailing on of the shoe, and of such consistency that it can be moulded into shape, so as to be easily applied to the parts, while at the same time it will not be affected by exposure to moisture. Of all the substances the author experimented with, gutta percha was the only one which offered any chance of success. When the fabrication of gutta percha soles were introduced, the author conceived the idea that means similar to those employed to fix them to boots and shoes would be equally efficacious for the purpose of attaching the material to the horses' hoof, but the experiment proved a failure, although he was assisted by M. Ledow a celebrated manufacturer of boots and shoes.



Notwithstanding all the care and trouble they took they could not obtain the slightest adherence between the substance and the hoof. After several failures it was found that an admixture of gutta percha and gum ammoniac offered some chance of success. Two parts of gutta percha with one part of gum ammoniac, melted together over a slow fire, and well incorporated by frequent stirring was found an excellent agent for the required purpose.

To apply it the hoof should be perfectly dry and free from grease. The composition after being warmed is to be applied with a spatula, and smoothed by a heated piece of iron. M. Defays adduces several instances in which this substance has been applied to horses, which have been able to work when they otherwise could not have done.

### Pleuro-Pneumonia.

We find the following address of the Massachusetts State Cattle Commissioners on the subject in a late number of the *Boston Cultivator*.

To the Farmers of Massachusetts.—The disease termed pleuro-pneumonia has appeared in several herds of cattle in the eastern portion of the State during the present season. The State Cattle Commissioners have adopted the most effective measures to prevent its dissemination. All cattle that have been exposed, with the exception of four, have been destroyed. The Commissioners have been forced to this mode of action by the logic of facts. These have been scrutinized with the utmost care and vigilance. No opportunities have been suffered to pass without improvement, and no efforts have been regarded as vain which promised to throw light upon the origin and characteristics of the disease. Two of the three Commissioners commenced their labours with a feeling that by careful inquiry and by thorough examination, they should be enabled to demonstrate to the public the expediency of the action of the former Board of Commissioners, as well as the groundlessness of the apprehensions of many in regard to the fatal character of the disease.

A number of persons had published treatises to prove that pleuro-pneumonia was generated in poorly-ventilated barns, and was not infectious. The facts as developed to the Commissioners, have constrained them to discard their first impressions, and to deny the positions of the various writers before alluded to. They have, moreover, thoroughly convinced themselves that the worst apprehensions in regard to the disease are well founded and wise. They have found the disease prevailing in barns of every variety of structure, and of all degrees of ventilation, and even in the open fields. They have traced it from root to branches, whither it flows as surely as the sap flows in trees. They do not find a single case outside of the line of trans-

mission. As surely as every rivulet tends towards the sea, does each case connect itself with its fountain head. The conclusion is irresistible, that if any disease be infectious this one is. In Massachusetts the disease was introduced by four Dutch cattle imported by Mr. Cheney, of Belmont.

But it is said the same disease exists in New York, New Jersey and Pennsylvania. The Commissioners determined to see for themselves. They went to New Jersey. They were met in Bordentown by a veterinary surgeon of that place, Dr. Jennings, by a large stock-breeder and noble-hearted farmer, Adolph Mailiard, and by others, members of a Committee of the Agricultural Societies. They visited herds which had been infected with disease; found some where a large portion had died. They killed and examined a sick cow, and identified the disease with that in Massachusetts. In all instances where it existed, it had been introduced by cattle brought from Philadelphia. The apprehensions of the farmers in that region had been aroused, and the Commissioners found that a species of isolation had been resorted to; but this was far from being thorough and efficient. Cattle were allowed on the highway, even in some of the infected districts. Very erroneous impressions existed in regard to the character of the disease, even among those who were called to treat it. Attention was given only to such animals as had come down with disease, and attempts were made to treat these by various remedial processes, and those which lived and recovered their vital energies were regarded as safe—an error, than which none more fatal exists. It has been demonstrated to the Commissioners for Massachusetts, that the last state of this disease is more pernicious than the first,—in other words, that recovery is worse than death. We say to the farmers of Massachusetts, when the disease appears in your herds, separate the sick from the well, and both from all other cattle; fatten the cattle, if you can, for beef, and kill all of them. This is the only safe and effective remedy.

The Commissioners followed the trail of the Bordentown disease to Philadelphia. There the disease had committed great ravages; one man was reported as having lost his entire herd of sixty cattle. Treatment was here resorted to as in Bordentown, but the disease had evidently become an *institution*, and was looked upon with apathy by all classes. They neither looked for its origin nor contemplated its future. Hence, as in England, many regarded the disease very much as they do those diseases which affect various kinds of fruit trees; as an evil to be endured, which will have its course and then disappear. In the mean time they must drink the milk and eat the meat of animals whose inflamed or putrid lungs cannot supply the due and healthy proportion of oxygen to the blood. From Philadelphia the Commissioners proceeded to Brooklyn, N. York., to visit the herds

said to be infected with a milk-disease similar in its character to the pleuro-pneumonia of Massachusetts. They went directly to Skillman Street, to the place described by Frank Leslie in his illustrated paper. Near the cattle-sheds were several cows apparently dying from disease whose symptoms did not differ from those of cattle infected with pleuro-pneumonia. Leslie's description had impressed us with the idea that the cows in these places had been fed with offal collected from the city, and that in consequence, and by reason of bad ventilation, the disease had been there generated. This opinion seems to have been endorsed by the surgeons who had visited those places. They had entirely misrepresented the state of the case. By the kindness and favor of Messrs. Wilson and Fletcher, distillers, we were permitted to examine the cattle of various milk-dairies. Mr. Fletcher, who, by the way, is a Massachusetts man and every inch a gentleman, conducted us through the cattle sheds and explained to us the mode of feeding. The "swill," about which so much is said, proves to be nothing more or less than the distillery grains, so highly prized in this region for feeding cattle. In addition to these, more hay of the very best quality is fed out than is generally fed by the farmers of Massachusetts.

It was evident to us that no disease was there generated. Mr. Fletcher kindly procured for us a sick cow, which was killed and examined, and proved to be affected with the genuine, infectious pleuro-pneumonia. One man had lost his whole herd of forty by the disease. Whence did it come? The information was voluntarily proffered. It was brought over by a cow in a ship from England about the year 1850. This cow was taken on board to supply milk, and after the arrival of the ship, was sold to a dairyman near the South Ferry in Brooklyn. This cow had the veritable pleuro pneumonia, which she disseminated and which previously had never been known there. The disease spread with great rapidity, annually taking off more than fifteen per cent. of the cattle. The practice of inoculation was resorted to but without beneficial results. The value of the milk business in that section is nearly destroyed. The cattle that do not die are fattened and killed for beef, which confines the disease, happily, to that region.

Farmers of Massachusetts! be not beguiled into a false security. By efficient regulations and prompt action, this fatal disease may be excluded from the limits of our State. But in this matter, the price of exemption is eternal vigilance. Be on your guard; keep all unknown and suspected cattle far from your herds. See that no stray cows are allowed to wander in your streets, and even take care to know the state of each herd whence come cows to be served by your bulls. Especially be cautious as to the cattle sent to a distance in the country to be pastured, and do not allow them to be re-

turned to your farm in the fall without a clean bill of health. Be not afraid of being thought "fussy," and in particular, place no reliance upon the theories of inexperienced or prejudiced parties who may try and persuade you that this disease is not infectious, or that animals which have once had it and have recovered, are safe companions for other cattle. Total abstinence from all that can contaminate is the only safety. This is our faith, the result of our study and experience.

Signed, James Ritchie, D. F. Thayer, Henry L. Sabine,—Cattle Commissioners.

Boston, June 3, 1862.

### Runaway Horses---A New Check.

A great many patents have been taken out of late years for stopping runaway horses, and in almost every saddler's shop we see engravings of apparatus devised to squeeze a horse's throat, or nose, or to catch up one leg and throw him down. But to all machinery it is objected that if a horse is really running away at a great pace he cannot be stopped suddenly by violent means without considerable risk to man and beast. A very ingenious invention, operating upon the horse's movements by moral force alone, has been recently brought out by M. Leveque, a French officer of the Cavalry School of Saumur. His plan will assuredly not be approved of by those who object altogether to the use of blinkers, for it is but an extension of the blinker system. The partizans of blinkers, however, for horses in harness, are, up to the present time, in an enormous majority. The leading feature of M. Leveque's invention is to induce the horse by his own natural instincts, and without any mechanical force, to hold his head in such a position that the bit shall act properly upon his mouth. Inside of each blinker he places a sort of leather fan, called *lunette d'arret*, which opens or shuts at pleasure by means of a safety rein. When developed, it only partially blinds the horse, and it is in the natural action of the horse to avail himself of the sight left him that the virtue of the system consists. If he throws up his head to run away, and the lunette is opened, he can see nothing but the sky, and he then inevitably brings his head down to the proper position in order that he may see straight before him. If, on the contrary, the habit of the horse be to escape the action of the bit by curving his neck till the chin almost touches his breast, the apparatus may be so adjusted as to prevent him from seeing anything but the ground, and he naturally raises his head. Thus the lunette acts both as a bearing-reign and a martingale, but more certainly, and without the dangers and inconvenience of those contrivances. For horses addicted to shying, the apparatus is particularly useful. As soon as the horse pricks his ears to shy at any object lying in the road, the driver has



only to raise the lunette, and the animal, seeing only the distant horizon, and nothing immediately about him, will go by or even right through the thing which frightened him without taking the least notice. At an exhibition on the Champs de Mars in Paris, horses went unhesitatingly through the flames and smoke of lighted lumps of straw, which a moment before, when the lunettes were folded, they could not be made to approach.

The apparatus is intended chiefly for horses in harness, but there is a form of it adopted for saddle-horses. Of course a hard-mouthed horse can not unfailingly be prevented from running away merely by the use of this lunette, but a great deal is done towards diminishing the danger when his head is got into a proper position, because he will then surely be pulled up before long, and in the meanwhile the driver can guide him.—*Ann. of Scientific Discovery.*

### Cure for a Jibing Horse.

J. R. S., writing to *Wilkes' Spirit* from Pittsburgh, Pa., thus describes an occurrence to which he was witness :

I noticed a novel cure for a fit of "balks" applied to a horse yesterday. A fine iron gray horse, about 16 or 17 hands high, and weighing probably 1,200 or 1,300 pounds, with a fine, large, open forehead and bright, clear eyes, showing no signs of vice or stubbornness, was coming up street harnessed to a light, open, express wagon, and at a corner suddenly balked, and could not be persuaded to move: his driver then tried the usual remedy of careless, brutal drivers, viz., a tremendous flogging with a barrel stave. The poor animal evidently could not understand the operation, and showed no sign of vice, but stood still, with his head turned back, and his ears put forward, starting at each blow, but not rearing or kicking. The brute who was driving him kept up his cruelty for at least ten minutes, until a bystander stepped forward and offered to start him, and the drive rather surlily consented. The gentleman went up to the horse and quieted him by patting and soothing, and then stooped down, and gathering a handful of dust from the roadway, thrust it into the horse's mouth, and then taking him by the head, the animal, whom coaxing, pounding, and flogging failed to move, stepped off as quietly and docile as a lamb. The cure was entirely new to me, and I thought it quite a valuable one. The almost universal mode would have been to flog, and hammer, until either the two-legged or four-legged brute got tired.

### Artificial Hoofs for Horses.

It is impossible to calculate the various useful purposes to which gutta-percha may be applied. One of the most ingenious applications re-

cently made of this valuable substance, is that of making artificial hoofs for horses' feet. Many ingenious devices have been resorted to, to attain this result, but the adoption of gutta-percha will, doubtless, supersede all others, as soon as its efficacy becomes recognized. What is required by the veterinary surgeon, is a substance possessing the consistence of horn, to retain the nails of the shoe; that will readily soften by heat, so as to mould itself to the required form; that it will be indissoluble in water, seeing that the horse's hoof is generally in contact with moisture; and, lastly that it be capable of uniting perfectly with the hoof. No known substance possesses all these qualities except gutta-percha. For the purpose under consideration it is prepared by being cut into fragments the size of a nut and softened in hot water; the pieces are then mixed with half their weight of powdered sal-ammoniac, and melted together in a tinned saucepan over a gentle fire, keeping the mass well stirred; the mixture should assume a chocolate color. When required for use it should be melted in a glue pot; the surface of the hoof must be scraped clean, and the gutta-percha applied as required. The application may be facilitated by the use of a glazier's knife warmed, by which also the surface of the artificial hoof may be smoothed and polished. In this manner many a valuable horse may be rendered useful, which, otherwise, would only remain fit for slaughter. On the score of humanity, also, this application of gutta-percha is to be welcomed.—*Ann. of Scientific Discovery.*

### Miscellaneous.

#### About Keeping Goats.

Many persons who cannot conveniently keep a cow would find it profitable to keep one or two common goats. They require but little care, may be supported at small cost, and yield a good supply of milk of superior quality. A goat, well kept, will yield from three pints to two quarts of milk daily, for a large part of the year, the quantity diminishing in the cold weather as the time for kidding approaches. It is much cheaper to keep a goat in town than to pay a milkman, and families everywhere will find the milk very nutritive and wholesome, and especially good for children in most cases. An English writer estimates that two goats are equal to a small Shetland cow.

Goats may be very cheaply supported. If picketted in a pasture in warm weather, or allowed to be at large, they will pick up their own living, eating readily almost every sort of green thing. Grass, weeds, twigs of bushes, vegetables, fruits, nearly everything that grows, will suit their taste. They are fond of dry leaves, corn-stalks, horse-chestnuts, and even eat poisonous plants with impunity. If con-

fined in a yard, or in closer quarters, they will take the scraps and waste of the kitchen—Some persons allow them to feed out of the swill-pail, but this practice cannot be commended. Cobbett says, in his "Cottage Economy:"

"When I was in the army in New Brunswick, where, be it observed, the snow lies on the ground seven months in the year, there were many goats that belonged to the regiment, and that went about with it on shipboard and everywhere else. Some of them had gone through nearly the whole of the American war. We never fed them. In summer they picked about wherever they could find grass; and in winter, they lived on cabbage-leaves, potato-peelings, and other things flung out of the soldiers' rooms and huts. One of these goats belonged to me, and on an average throughout the year, she gave me more than three half-pints of milk a day. I used to have the kid killed when a few days old; and, for some time, the goat would give nearly, or quite, two quarts of milk a day. She was seldom dry more than three weeks in the year.

The same writer adds, that "goats will pick peelings out of the kennel and eat them. They will eat mouldy bread or biscuit; fusty hay and rotten straw; furze-bushes, heath-thistles and, indeed, what will they not eat, when they will make a hearty meal on paper, brown or white, printed on or not printed on, and give milk all the while? I may add to Cobbett's list of odd delicacies by stating that my own goats have gnawed smooth the rough sides of my pile of hemlock bark, and have cleaned out all the powder-post from the sills of the woodshed!

But goats like most other animals, prefer clean food, and will not devour all the above-mentioned things if a supply of more desirable edibles are at hand. In the winter, it is well to lay in a few hundred pounds of hay—second crop is preferable—a few carrots and some fine feed. Indian meal is sometimes given to them, but it is too drying. They need water occasionally, but do not drink much.

The goat is one of the most hardy of our domestic animals, enduring easily all extremes of heat and cold. It needs the shelter of a shed or barn in wintry and stormy weather, and will lie anywhere on the floor, preferring a board to a bed. Its natural activity and nimbleness, together with a capricious disposition, fit this creature to enjoy a state of freedom. When roaming wild, on its native mountains, it loves to climb the most dangerous and inaccessible places, clinging on the verge of precipices by its wide-spreading and sharp-edged hoofs, and defying the pursuit of the hunter. This inclination it manifests in domestic life, by scaling sheds, walls, wood-piles, &c., with great agility. But the goat will bear confinement extremely well, continuing in good health and yielding the usual quantity of milk. On shipboard it is healthier than any other domestic animal, and is highly

valued on account of its sportiveness, its familiarity, and its ability to give milk upon such waste food as is there obtainable.

The milk of the female goat is sweet, rich and nourishing. It has the body and smoothness of cream, is viscid and strengthening, little productive of oil, but abundant in the matter of cheese. In tea and coffee it is far superior to cows' milk, and will go at least as far again in imparting color and flavor. In all kinds of cooking it is equally excellent. It has no peculiar or unpleasant taste and is not affected by what the creature eats. Onion tops have been given to the females, by way of experiment, without imparting an oniony taste to the milk. I consider two pints of goat's milk to be as good to a family, in every way, as three pints of cows' milk.

For most feeble and sickly children, as well as those in health, it is invaluable. It does not tend to form curds in the stomach, as cows' milk does, and is therefore frequently prescribed by physicians in cases of extreme weakness. It is sold for this purpose in Salem at twenty-five cents a quart. Invalids abroad often resort to the mountainous districts of Ireland and Scotland to derive benefit from the use of this article, which is there known as "goats' whey." Mr. Colman noticed that the Irish mountaineers, about the Lake of Killarney, kept from one to thirty goats apiece, for the sake of the tourists to that delightful region. In Spain and Portugal, goats are abundant, and in Lisbon, their milk is more commonly used than that of cows. The goats in those countries are driven into the cities in the morning, and milked at the doors of the houses. The district in France most celebrated for goats is the Canton Mont d'Or, where, in a space not exceeding two leagues (six miles) in diameter, upwards of eleven thousand are kept, chiefly to supply the city of Lyons with cheese. There are several other interesting particulars relating to the goat, which I will give in another paper.

G. L. STREETER.

—*New England Farmer.*

Salem, Jan., 1862.

HINTS TO FOWL KEEPERS.—B. S. H. gives in the *Prairie Farmer* his method of keeping fowls, thus: "The way I keep my hens laying and healthy, is in the first place, by giving them plenty of corn and oats, also some buckwheat. Last fall I commenced throwing out ashes from my stoves in a pile near my yard, so as to use with compost in the spring. I soon discovered my hens came to the pile every morning as soon as light, (cold or heat,) through the winter. They would pick up and eat coal, from the size of a wheat kernel to a thimble. My hens commenced laying in November, and have laid ever since. They are last harvest's chickens. If they cannot have access to wood charcoal, pick up and burn all the bones you can find and pound them fine, and place them where they can have easy access to them."



## Editorial Notices, &c.

LETTERS FROM CANADA, with illustrations. Tenth edition, printed at the "Morning Chronicle" Office, Quebec.

We are indebted to the author for a copy of this interesting and useful little work. It is of a kind to convey a great deal of useful information to persons in the better classes in the British Islands, thinking of emigrating somewhere; and we should be glad to see it distributed extensively with that object.

MANUAL OF AGRICULTURE, for the School, the Farm and the Fire-side, by George B. Emerson, and Charles L. Flint. Boston: Swan, Brewer, & Tileston, 1862.

We have received from the publisher a copy of a new edition of this work. Having noticed it on a former occasion, (December 1861), we will merely repeat that we consider it admirably adapted for the use of Schools, and a valuable hand-book to all interested in rural affairs.

REPORT OF THE MASSACHUSETTS BOARD OF AGRICULTURE.

We are in possession of the Ninth Annual Report of the Secretary of the Massachusetts Board of Agriculture, together with Reports of Committees appointed to visit the County Societies, with Appendix, &c., for 1861. This is a handsomely got up volume, and the Secretary of the Board, Mr. C. L. Flint, who is known as the author of several able treatises on agricultural subjects, has embodied in it much useful and interesting matter, amongst which we may mention a Report on Cattle Breeding and Feeding, a Report on the Wastes of the Farm, a Report of Committee on Wheat Culture, a Report on the Native Animals of the State, &c., &c.

## WANTED!

A THOROUGH BRED DURHAM BULL not over two years old. He must be from stock of good milking qualities. Apply, stating pedigree, price, &c., to the Editor of the *Agriculturist*, Toronto.

Toronto, June 20, 1862.

3t.

## A Thorough Bred 2 Year Old AYRSHIRE BULL

FOR SALE, by Mr. Denison, Dover Court  
Toronto.

April, 1862.

## THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

## FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,

Dover Court.

Toronto, Aug., 1861.

## Notice of Partnership.

THE Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING.

GEORGE W. BUCKLAND.

## NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

## Seeds! Seeds!! Seeds!!!

JOHN GEORGE WAITE

181 High Holborn, London, England.

HAS THE LARGEST STOCK OF VEGETABLE, AGRICULTURAL, and FLOWER SEEDS, IN THE WORLD, and can supply dealers on better terms than any other whose sale house, as he makes most extensive arrangements with none but experienced growers do produce his supply of seeds, which are raised and grown from stock selected under his own personal superintendence, and as they are all cleaned and picked in his own extensive warehouses by an auxiliary strength of several hundred men and women, kept for that purpose, he is enabled to recommend, with the greatest confidence, every description of Seed offered by him for sale, and he therefore invites Seed Dealers to apply for his Catalogue.

TERMS—Cash, or satisfactory reference in England.

March, 1862

6t.

## VETERINARY SURGEON.

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

## THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES, FOR UPPER CANADA,

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

## IMPROVED BERKSHIRE PIGS

**F**OR SALE by Mr. Denison, Dover Court, Toronto.

Toronto; April, 1862.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

## Contents of this Number.

|                                                                                                                                | PAGE. |
|--------------------------------------------------------------------------------------------------------------------------------|-------|
| The Wheat Crop and its Enemies.....                                                                                            | 385   |
| Remedy for the Turnip Fly.....                                                                                                 | 387   |
| The Season and the Crops.....                                                                                                  | 387   |
| The International Exhibition.....                                                                                              | 387   |
| West of England Cattle Show.....                                                                                               | 388   |
| Botanical Society of Canada—A new<br>Fibre Plant.....                                                                          | 389   |
| Cotton.....                                                                                                                    | 390   |
| The International Exhibition.....                                                                                              | 391   |
| Hints for a Report—Township of Hamil-<br>ton.....                                                                              | 393   |
| Value of Coal Ashes and Cinders.....                                                                                           | 395   |
| Land Drainage—County of Essex.....                                                                                             | 396   |
| The Army Worm.....                                                                                                             | 396   |
| The Edinburgh Sewage Meadows.....                                                                                              | 397   |
| AGRICULTURAL INTELLIGENCE:                                                                                                     |       |
| Provincial Shows, 1862.....                                                                                                    | 400   |
| Soiling Milch Cows, Yield of Grain in<br>England, Michigan State Society, The<br>Sugar Beet, Wheat Crop, Food for<br>Hogs..... | 400   |
| HORTICULTURAL:                                                                                                                 |       |
| Horticultural Shows.....                                                                                                       | 401   |
| Fruit Growers' Association.....                                                                                                | 401   |
| Apple Tree Borers.....                                                                                                         | 401   |
| Improvement of Grounds.....                                                                                                    | 403   |
| Fruit Trees in the West, Growing Double<br>Flowers.....                                                                        | 404   |
| Riband Borders, Strawberry Culture, Re-<br>newing Peach Trees.....                                                             | 405   |
| Cultivation of Wild Flowers.....                                                                                               | 406   |
| Indoor Gardening.....                                                                                                          | 407   |
| DOMESTIC:                                                                                                                      |       |
| Approved Domestic Receipts.....                                                                                                | 407   |
| Hard and Soft Soap.....                                                                                                        | 409   |
| Killing Rats, How to Cook Eggs.....                                                                                            | 410   |
| VETERINARY:                                                                                                                    |       |
| Sore Shins of Horses.....                                                                                                      | 410   |
| Experiments in Supplying Artificial Hoofs<br>for Horses.....                                                                   | 410   |
| Pleuro-Pneumonia.....                                                                                                          | 411   |
| Runaway Horses.....                                                                                                            | 412   |
| Cure for a Jibing Horse.....                                                                                                   | 413   |
| Artificial Hoofs for Horses.....                                                                                               | 413   |
| MISCELLANEOUS:                                                                                                                 |       |
| About Keeping Goats.....                                                                                                       | 413   |
| Hints to Fowl keepers.....                                                                                                     | 414   |
| EDITORIAL NOTICES, &c.....                                                                                                     | 415   |

## FOR SALE.

**A** LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, JULY 16, 1862.

No. 14.

The New Wheat Insect.

We find the subjoined letter in a late number of the *London Free Press*, under date of July 12th. We have received several communications on the same subject, accompanied with specimens of the insect, from various parts of the country where it has been seen. In some districts where the wheat *midge* has not yet made its appearance, the farmers have supposed that the new insect is that dreaded visitant. Thus however, it is almost unnecessary to say, is not the case. The new insect is an *Aphis*, nearly resembling in appearance those often found upon garden or green house trees and plants. We are inclined to think from specimens sent us, that there may be more than one variety or specie of them, as they differ considerably in size and colour. They are all however very nearly allied, if not of the same species. Some of the specimens on opening the letter in which they were received have appeared of a bright scarlet or orange color, and very minute in size, a few of them with wings, the majority apparently without, and most of them alive. On opening the same letter the following day, all the insects are found to be changed to a brown or green colour, many of them dead, a few still living. Other specimens received have been considerably larger in size, varying from brown to a light green in colour, and apparently of a different form to the smaller kind. Some of the orange-coloured aphides with wings certainly resemble the per-

fect fly of the wheat midge a little in appearance at first sight, and this may have given rise to the impression that they were the same. The insects are, however, quite distinct. The *aphis* has appeared this year over very extended areas of the country. From what accounts have yet been given of it, it does not seem to cause any very great amount of injury to the wheat, although it must undoubtedly affect it to some extent:—

(To the Editor of the Free Press.)

DEAR SIR,—I had placed in my hands, by a gentleman in the market, an ear of wheat covered with insects very much resembling, at the first glance, the common "*Aphis*," found on the soft stems of roses and other garden flowers. My friend told me that the ear of wheat given to me was one out of a field taken without any special selection, every ear appearing to contain a great abundance of similar insects; the one I had contained about 100 insects, and many must have been shaken off in previous handling of the ear. Some of the insects possessed wings rather imperfectly developed, others had no wings, probably the not fully developed animal. On placing the insects under the microscope, they appeared to me to belong to the order "*Hemiptera*," or half-winged insects. The common tree bug is a fair example of the order. The insects had a largely developed "*rostrum*," which is the underlip of the insect, jointed, hollow, prolonged, and tapering to a point—in short, like the upper lip of the elephant called its trunk, but more horny and piercing at its point. Those insects which had not been disturbed were situated at the junction of the grain, with the ear stalk, and had their rostrums securely entered into the grain, which, in the specimen I had, was just formed, that is, the grain

was in its early membranous state with its white centre discernable. The result of the operation of such innumerable enemies as these insects must be the utter exhaustion of the grain. As the white kernel of the grain is secreted, it must be sucked into the hungry stomachs of these destructive animals; and the whole crop, supposing them to be as numerous throughout as on this specimen, must be shrivelled, half-grown, with very little flower in the grain, even if it ever reaches maturity. A more perfect boring apparatus, at the same time hollow, with great powers of suction, capable of drawing into the stomach of the animal every fluid particle in the grain, could not be devised or imagined. So soon as the grain hardens, the crop must be safe from this insect, unless future observation shows that it can derive subsistence from the fluids of the stalks as well as from the grain itself. Not one of the insects I have seen on this ear had attempted to penetrate the stalk, but that may be because being, as the saying is, "sworn at Highgate," it likes the juicy grain better, and when the grain becomes hard, they may turn their attention to the stalk. I do not think this very probable. But if I were a farmer and found my field covered with them I should be very much inclined to cut it down for hay, and wheat makes good hay when cut green, (I have cut many acres of it for hay when in Australia,) and sow the field for another crop of hay with any grain, such as rye or millet, or anything likely to yield a crop of this season. It would be found almost impossible to shake the insect off the ear. I doubt if a storm of wind and rain would do much to wash or shake them off, for they are possessed of good holding legs and feet and grasp the plant very tenaciously, and in addition to their legs, they have their "rostrum" to hold on with. Rain would only wash off the unattached; whether it would kill them I do not know, I should think not, unless the temperature fell very considerably. What other means the farmers possess for destroying the insects must be left to their own judgment. I doubt whether a grain of wheat once penetrated by the "rostrum" of these creatures can ever develop into good wheat, and whether grain so damaged as the ear shown to me would ever be worth so much as an average hay crop. But this is a matter for the judgment of each farmer. I shall be happy to show any farmer the insect and the penetrated grain, if he will bring specimens with him, for when once killed, the insect will not long exhibit its peculiarities. It soon loses its plumpness, and the shape of the rostrum is lost. Those I now possess will not be worth looking at on Monday, when your impression appears.

I think the prevalence of this insect is due to the continuance of dry weather, and may not be expected in ordinary seasons. If this country possessed the small birds of Europe, they would flutter about the ears of a wheat field, and pick

all these insects off before they would become so destructive. It is much to be regretted that small birds are so scarce. Every insect-eating bird should be amply protected by every farmer.

I remain, &c., HENRY LANDOR.

[The following is one of several letters addressed to the Editors of this Journal on the same subject.]

*To the Editor of the Canadian Agriculturist.*

DEAR SIR:—Enclosed you will find three specimens of wheat of the same variety infected with a kind of insect previously unknown in this section of the country.

As the wheat midge has of late years been committing serious havoc, in various parts of the Province, some farmers are of opinion that the insect above mentioned is the wheat-midge; but after a careful examination of this insect, and comparing it with Professor Hind's description of the midge, I am satisfied it is not the same. When first seen upon the wheat the insect was of a red fleshy colour; after a while it changed to a light green colour, probably caused by the animal's praying upon the ascending sap. The insect is very common throughout the County of Waterloo. If you could afford me any information in regard to the nature and habits of the insect,—if injurious to the wheat crop,—or if previously known in other parts of the country,—you would much oblige me as well as a large number of inquiring farmers.

Yours truly,

A. BARRIE.

Galt, July 14, 1862.

**The International Exhibition.**

LONDON, ENGLAND, June 11, 1862.

*Editors of the Canadian Agriculturist.*

Since my last there has been rain almost every day. There is a great deal of hay cut, and, although the weather is so precarious, the people manage to get it cured by close attention. I speak of course of the small fields in the immediate vicinity of the city, which I have had the opportunity of occasionally seeing. The races of last week seemed to be very much enjoyed by the population of the city of London. Situated as we are on the Clapham Road, we had a full view of the crowd, in astonishing numbers and in all sorts of vehicles, going and returning.

On Monday last, being Whit-Monday and a general holiday, the number at the Exhibition increased up to 60,000, or thereabouts. Yesterday the crowd was very great, and to-day they fill every vacant space. Looking down from the galleries, the movements of



the crowds of people give them a curious appearance, which suggests to one's mind the comparison to hardly anything so much as to that of a busy swarm of bees.

We (the jurors) have, we hope, got nearly to the end of our labours. For six weeks we have been nearly the whole time engaged in the examination of the products of the various countries of the earth from which articles of human food come; and there are few in which the Almighty has not made ample provision for his creatures. We find that the advantages of any one country over another are not so great as people are apt to imagine.

But of all the countries that have made an exhibition of their products none equal the colony of Victoria. Her wheat, her wool, and her gold proclaim her to be the richest country in the world, and the people have been active in their exertions to make a good appearance at the great exhibition. They have been late in getting all their things in their places, but they have eventually succeeded in making a very creditable display, both of the useful and ornamental. The samples of wheat, barley, and oats prove that the country is foremost of all in the growth of the cereals, while their paintings and photographs show that the fine arts are not neglected.

Samples of wheat weighing 66, 67, and one of 68½ lbs. per bushel are shown, and these of the most beautiful white varieties I have ever seen. Our grains are much admired, but I am compelled to admit that we are beaten by Victoria in the exhibition. We shall get a fair share of medals. There is no competitive examination, but the products of each separate country are compared with one another by themselves, and circumstances of climate and soil taken into consideration.

June 19th.

I had hoped by this time to have been able to give you some detailed account of the many interesting articles in the Exhibition; but the business of the jury has kept me so constantly engaged that I have been only able to take an occasional stroll from one court to another. We are now, however, almost at the close of our labours, and hope to finish to-day. It has been a much more tedious business than I at first expected, but I find that here as well as elsewhere the few that will work must expect to have the most to do. The numerous articles to be examined weary the examiner, and often exhaust his patience. The importance of our class makes it necessary to be particular. I think I have stated that there is but one class of medals. Our awards, therefore, expressive of the different degrees of merit, are either "Medal," "Highly Commended," or simply "Commended."

I shall not now have much time to devote

to a critical examination of the other departments of the Exhibition, as to-morrow I hope to do what I have been for some time desirous of doing, viz., go with my friend Mr. Prout to his farm, about thirty miles distant, to see his steam plough at work. He has an engine that works his ploughs and scarifiers, and he seems to be well satisfied with the results. This is his first year of putting the steam machinery into operation. He is carrying on farming on a large scale, at least we in Canada would think it so. He has forty acres in Swede turnips and mangel wurzel.

The month of June has so far been exceedingly wet. It has rained less or more every day, several days all day, and frequently heavily. We Canadians find it cold and uncomfortable, still the fruits of the earth are coming to maturity; strawberries are abundant; peas and young potatoes also are in the market in plenty. It is amusing to see the immense loads of rhubarb, asparagus, early cabbage, lettuce, and spinach, piled on the great heavy wagons, like loads of hay, and drawn by generally three and sometimes four heavy horses. I see them in the evenings, or early in the mornings, wending their way to the principal markets, where they are soon disposed of to the crowds of customers who have to be supplied.

Next week the meeting of the Royal Agricultural Society takes place. One of our jurors, Lord Portman, is the President, and has succeeded in having all the Jurors made honorary members of the society, so we shall have all the advantages of that position. The meeting is looked forward to with a great deal of interest. It takes place in Battersea Park, between where I am living and the Exhibition. I shall give it all the attention I can. The trial of implements, which will be very numerous, takes place some twenty miles off, and will be a very interesting part of the exhibition. I will endeavour to give the whole affair as much attention as I can, and communicate what I think will interest my Canadian friends. It is to be hoped the weather will be fine, but this morning is still lowering and threatening rain, but it will surely be fair soon. This continued rain surprises me the more because when I was here in 1851 the weather during the month of June was very fine indeed, very like Canadian weather.

I learn that much of the grass that has been cut is seriously injured, and will only be fit for litter.

June, 26th.

Since my last date I have been down in Hereford at Mr. Prout's farm, and seen his plough at work. His farm, of upwards of 400 acres, is admirably adapted for its operation, and it was doing the work in the most effective manner. The farm is a stiff clay,

and the steam machine worked it up to a depth of seven inches, and moved at the rate of about four miles per hour, or twice as fast as an ordinary horse team. The whole is so admirably arranged and all the parts so complete, that the time required to start from each end of the field is not longer than is required to turn a team of horses, and it takes four furrows at once. The estimate is, that it does the work in the stiff clay that would require thirty-two horses. The only drawback to its complete success is the occasional going wrong of some part of the apparatus, and the consequent stoppage of the work. This is the case sometimes, but not often. Upon the whole I am of the opinion that upon a farm of four hundred acres, which lies favourably, steam cultivation can be employed with advantage.

The Show of the Royal Agricultural Society, is now going on here. I was in the stock yard yesterday and was much pleased with the arrangements. There is a splendid show of animals. The Short Horns are of excellent quality. The Devons, Herefords, and another very long-horned breed from some of the counties, are all very fine. The Gallo-ways, and red Suffolk polled cattle are also very good. The latter breed are much like the Devons, only without the horns. I admire them much; they are noted for their milking qualities.

All the different breeds of sheep are here represented by specimens of the most approved form, and of the finest quality obtained by the art of breeding. There are some majestic-looking rams from the Highlands, of the blackfaced breed, with horns of imposing proportions, and with carcasses of dimensions far beyond anything I ever supposed they attained to. The Oxford, the Shropshire, and several other varieties of Downs are all excellent of their kinds, but for beauty and symmetry of form none beat the Leicesters and the old South-Downs. Swine are well represented by the Berkshires, large and small, the Sussex, Yorkshire, Suffolk and Dorsetshire breeds.

I have not mentioned the Welsh, Irish, and Jersey cattle. Numbers of all these are on exhibition, and also foreign cattle from France. There are Ayrshires that compare favorably with any from Scotland, and there are some good ones from there. Some of the Dutch cattle are excellent animals, and from Switzerland there are many of the native cattle that are by no means bad. But the Short-Horns still maintain their superiority, and are on this occasion well represented. There are animals amongst them that would repay one for going a long distance to see them.

Horses are exhibited of all classes, from the Shetland half starved poney, to the monstrous Clydesdale, the Suffolk and dray horse. There

are some of the most noted thorough-breds, hunters, roadsters, carriage horses, and useful ponies of fine shape and substance. The Suffolks are the most popular of the large breeds, and are really good animals. Some of the Clydesdale breed are very much superior to any I had ever previously seen. One mare of that breed and which took the first prize is a remarkably fine animal and is held at 600 guineas.

I have not yet been in the Implement Yard where the Implements are in motion, but I have been in that where they are on view not in motion, and will reserve the description until I have seen all in both yards.

We have now concluded our duties as jurors of the International Exhibition. Canada will receive a goodly share of medals and commendations. I perceive that the season has been very dry in Canada. It has been quite the reverse here, as I have already stated. There have been two or three fine days this week, and a good quantity of hay will no doubt be secured.

It seems to stand the rain better here than with us, I suppose because the sun is so constantly obscured. Your's, &c.,

E. W. THOMSON.

## The Season in Huron.

*Editor of the Canadian Agriculturist.*

SIR,—I see by the Newspapers that other parts of the province are blessed with fruitful showers which we very much need here. Since the latter part of April we have had but two or three light showers, which damped the ground to the depth of an inch or two, when it would be dry again in a day or two. No one here ever remembers to have seen such a dry time.

The Spring wheat, sown early, is about shooting out, and is hardly a foot high. There are no meadows fit to mow, many have turned their cattle into them; late oats is just peeping up among the clods. Not only has the weather been dryer than usual, but the Spring frosts have been more severe also. The Fall and Spring wheat sown on new land were never injured so badly by Spring frosts as they were this Spring. Other Springs we generally had a light frost after rain, but this Spring we had the frost without the rain. Nearly all the currants, cherries and plums were killed by the frosts.

A dry time injures comparatively new settlements like this, where the land cannot be or is not cultivated deep among the stumps, more than older parts of the country, where a better system of cultivation can be followed.

Yours respectfully,

A WAWANOSH SUBSCRIBER

Wawanosh, July 4, 1862.



Written for the *Canadian Agriculturist*.

## Hints for an Agricultural Report of the Township of Hamilton.

*Continued from page 395.*

Passing from stock to crops, in which a large proportion of our farmers are more directly interested, we would notice first, Fall Wheat. The method pursued with this crop when it was cultivated extensively, was either to summer-fallow the land, giving it generally three ploughings; or else to sow it after a pea crop, giving it one or two ploughings, as was found convenient, or the state of the ground required. In the early settlements of the township, fall wheat was the only kind grown, and when so much of the country was covered with wood there was little danger of winter-killing—the *fly* had not then been heard of; the *rust* was the enemy most dreaded by the farmer. We have frequently heard old settlers remarking how much easier they could get a good crop of wheat *then* than they could *now*—“every thing they put in the ground seemed to grow well; if they could only get the seed sown they were sure of a good crop, &c., &c. With the clearing away of our forests, the ground became more exposed, so that the snow, (the great natural protector of our wheat and of our fields in winter), disappeared more rapidly under the influence of the wind and the sun, and the wheat plants were weakened or destroyed by the spring frosts. Then the plants that were left tillered too much—became too rank in their growth, and the rust and mildew finished the crop. Notwithstanding all the increased skill and care of our farmers so much did this become the case that the cultivation of fall wheat has been given up in the front part of the township, and is now grown in the middle and rear parts in yearly decreasing quantities; the land in these parts being higher and dryer, and the soil lighter than the front.

The varieties grown here have been various. When we first came to the township the White Flint was a favourite kind; then the bald red chaff white wheat was common; then the Hutchison white became the favourite for some time, but we think the Soule's white wheat has become the most valuable variety, and, since its introduction, has almost driven all others out of cultivation. The blue stem has been grown to some extent, and has done pretty well. The Mediterranean and the Kentucky May wheat have been tried, but with no very marked success. The second prize for the 25 bushels, and the first prize for the two bushels have been taken in the township at the Provincial Exhibition.

The repeated failures of fall wheat no doubt at first induced our farmers to try spring wheat; like most new things it was tried but sparingly at first, but as its cultivation became better un-

derstood and better varieties were introduced, it became more popular. By the last census it appears that four acres of spring are now grown for one of fall wheat in this township.

Spring wheat is sown after all kinds of root crops and Indian corn—it is sown after peas. The land is generally ploughed twice in the fall, when the manure, if any is used, is put on, and then cultivated in the spring, or else simply harrowed in. In this way good crops of wheat are often obtained, and this method is extensively practised. Sometimes land is *rag* or *bastard* fallowed—that is, the land is ploughed and harrowed immediately after the hay crop is taken off, and then allowed to lie till after harvest, when it is cross-ploughed and harrowed; it is then ridged up before the frost sets in, and sown in the spring, without any further preparation, or else cultivated and sown—manure may be applied at any of the ploughings, as is convenient; when applied before the first or second ploughing it becomes well mixed with the soil. Sometimes a field that has been mown for one or two years is ploughed up with a Michigan Sod-and-Subsoil plough, and sown with wheat; but this method seldom produces such good crops as the other, but there is less labour by this way. Spring wheat is often sown after fall wheat; on land that had been summer-fallowed for the fall wheat the crop is often very fair; it is sometimes sown on the same ground two or three years in succession, but this is not often profitable, as it seldom yields well to sow wheat after wheat; sometimes land, when very dirty, is summer-fallowed for spring wheat; the crop in this case is apt to be too strong. The great breadth of land under root crops in late years, and the increased quantity of peas grown, render the use of other preparations for spring wheat almost unnecessary.

*Varieties*—The kind first grown here, as far as we know, was the Italian Spring Wheat—a heavily bearded variety, which though it hardly yielded so well to the acre as some varieties that came after, was, on the whole, a good hardy wheat, and made good flour. The variety next introduced was the Siberian—a fine bald or very slightly bearded variety, with a bold plump berry, so much so that it was sometimes mistaken for fall wheat. This kind gave a great impetus to the growth of spring wheat, for the first few years after it was introduced it yielded extremely well, and its fine sample made it much sought after,—but, after a few years, it became very subject to rust, which, in the season of 1848, caused a great failure of this kind, and led to the abandonment of this variety.

About the time the Siberian spring wheat was failing, two other kinds were introduced—one called the Bald and the other the Bearded Club. The Bald Club is an excellent variety, still much grown on our light soils, where it can be sown early, so as to escape rust and fly. It

always commanded the highest price of any of our spring wheats: it is, as named, a bald variety; and in favourable seasons, a very fine sample with large bright berries. The bearded variety grew a very short ear, resembling a *club* with six or eight rows in the ear; it was best adapted for low, strong land, as it was not subject to rust, it yielded middling well, but was very hard to thrash—no fear of its shaking—it was rather fine and weak in the stem, very apt to lodge, which made it troublesome to harvest—there has been none of it grown here for many years. The Black Sea wheat, and the Tea wheat, were tried to some extent, but with no marked success. These two varieties were very similar, if not identical; rather soft in the straw, very apt to lodge and crinkle down; there has been none of them grown lately. But by far the most valuable variety that has ever been tried here is the "Fife Wheat;" it began to be introduced into this township in 1849, having been grown in the neighbouring township of Otonabee for six years previously, and on all low wet strong land has entirely superseded all other kinds. Its most marked quality is its being always free from *rust*, and its bearing to be sown so late in the season as to escape the *fly* in a great measure; it is a bald variety, moderately productive, is reckoned rather hard to grind, but makes good flour. Its introduction was providential, as without a variety with its properties it is hard to say what the farmers on the low wet lands in the township would have done.

It does not reflect much credit on our farmers that they have not ere this bestowed some public testimonial on the gentleman who was the means of introducing it into the Province—he certainly has been a public benefactor, and we hope he will not be allowed to pass away without some mark of esteem for his public spirit; would all our farmers who have directly benefited by it (not to speak of other classes who have been indirectly benefited) contribute only one dollar each, we feel assured it would make a handsomer testimonial than was ever presented to any man in Canada.

There is a variety called the China wheat that has been tried of late; it is a heavily bearded kind, said to be best on light land; it has not been sufficiently tried to see whether it will prove valuable or not. The first prize for spring wheat has been twice awarded to this township at our Provincial Shows.

Before passing from the cultivation of wheat we would notice briefly the insect enemies by which it has been attacked in this township; in doing so we will confine ourselves chiefly to our own observation and experience. During the years 1840 to 1844 a fly that somewhat resembles the Hessian fly in the manner it damaged the wheat crop; it did considerable damage, but it soon passed away, and we have not observed it in any considerable numbers until

the past two seasons, when it has again made its appearance. We are inclined to think it is not the Hessian fly, but some one or other of the species of Joint flies. The larva of this fly we have found in the first or second (very rarely in the third) joint from the ground; when the larva makes its escape it eats through one side of the stem of the wheat, thus causing it to crinkle and fall down. The larva is of a dark brown colour, tapers to both ends, and is rather more than the eighth of an inch long; its ravages have never been very extensive, therefore the fly has been little noticed.

The next insect enemy to the wheat that made its appearance was a caterpillar, which we first observed in 1843, and in that and the two following years it was rather prevalent, and caused considerable alarm among farmers at the time; after 1845 it passed away, and was not observed till 1853, when it again made its appearance, and was to be found in most of our wheat fields till 1856; since then we have not seen a single specimen, nor heard anything of its ravages. This caterpillar is called, in the New York reports, "Gaylord's Wheat Caterpillar," and we believe the fly that deposits it has never been ascertained. Asa Fitch, the New York State Entomologist, to whom we sent specimens in 1856, states so, and was very anxious to have the parent fly ascertained. We have, on one or two occasions, attempted to preserve them through winter, but have always failed. There was mostly only one or two caterpillars in a head of wheat, (occasionally we have seen three,) they completely destroyed the grain of wheat they were bred in; and, when numerous, might be found crawling about the barn in great numbers, after the wheat had been taken in. When cleaning up the wheat after thrashing, the screenings would appear alive with them; and, when disturbed, would roll or coil themselves up. When the caterpillar was first seen, they were not more than one-tenth of an inch long, those we kept grew till they exceeded  $\frac{3}{4}$  of an inch in length. On their first appearance they had a soft cylindrical body of a tawny colour; the head much darker than the body, with the appearance of five dull stripes along the body and at least six pairs of legs; they destroyed the wheat soon after it was put in the barn—those we kept gnawed hard grains of wheat, beginning at the seed end; they seemed to prevail alike in early or late wheat, as we have found them in the fall wheat harvested in July, and in spring that was not sown till after the middle of May.

The damage done by this enemy of the wheat was trifling, compared to what was done by the wheat fly or Midge, (the *cecidomyia tritici*) which first made its appearance here in 1853, and has ever since injured our wheat crop less or more. This insect is too well known to all our farmers to need any description. It is now well known the fly comes first out from about



the middle of June to the 1st of July, according to the season, as it is late or early, and remains some weeks; it deposits its eggs in the ears of wheat as they emerge from the sheath—that is, just as it is shooting out—calm moist weather being favourable to them; they mostly deposit these eggs in the evening and during the night; dry windy weather in a great measure prevents their ravages. From a knowledge of their habits and the time of their appearance, we have been led to sow spring wheat late, so that the flies may have passed away before it heads out; for this purpose the Fife wheat answers admirably, as it is not subject to rust even when sown very late. The last season our wheat has been attacked by two other enemies—the Army Worm, and what may be called, an *army of aphides*. The army worm made its appearance here about the first of August, and remained about a fortnight, destroying the wheat and other crops; it was worse in spots of lodged and green wheat, and very partial, in some fields doing serious damage, and in others but a short distance off, doing little or no damage at all—in fact not one to be seen. They caused great alarm at the time, but did not do near the damage that was anticipated. The worm was from an inch to an inch and a half long, striped with bright yellow stripes along the body, with eight pairs of legs, and had altogether a formidable appearance; it could travel easily from one field to another, taking the grass clean off on its route. We secured some specimens in a glass, when they soon passed into the *pupae*; in this state they remained fifteen days, when they emerged into an ordinary looking moth of a tarnished yellow or drab colour, inclined to russet, with a small white dot near the centre of its fore wings, and a dusky oblique stripe at their tips; a full scientific description of it may be found in most of the agricultural journals of the past year from the pen of Asa Fitch, New York.

The other destroyer of our wheat alluded to had quite a different look; it appeared about the same time as the army worm, at least we did not observe it until examining our wheat for that worm; it was an aphid, or plant louse, and in some cases filled the ears of wheat and oats; it was small, of a dull red colour, with two long dark colored antennæ, which it had the power of laying along its back, giving it the appearance of a black line along each side, with these it usually kept feeling forward; close behind the antennæ were two dark spots or eyes; it had three pairs of legs, the hind pair much longer than the others; it had dark protuberances on the hind parts, and a short tail-like appearance behind; the body was smallest before, and gradually became larger till past the last pair of legs, when it tapered off rapidly; they were pretty active, and could run from one part of the ear of grain to another. Our magnifier was too small to enable us to say what its mouth

was, but we judged it was adapted for sucking, and not for cutting or tearing; they were always in clusters, and appear to multiply rapidly. On putting some in a glass they became, in a few days, a small clear-winged fly. We are inclined to think they did considerable damage to spring wheat.

The grasshopper has occasionally attacked our crops; the greatest damage done by them was in 1858, when they seriously injured late spring wheat, oats, root crops, clover seed, and pastures. In 1859 they were numerous, but the damage done was not so extensive, as they were that year destroyed in great numbers by a parasite. From their great importance we have dwelt thus particularly on the wheat crop and their enemies; we will now pass over our other crops more rapidly.

**Barley.**—This crop is not grown extensively in the township. It appears from the last census that only 300 acres were in this crop; its cultivation has fallen off, and spring wheat taken its place; on the heavy clay land the two-rowed variety is mostly sown, and the six-rowed on the lighter soils; it is mostly sown on wheat stubble; often one or two ploughings. The best crops are raised when sown after a root crop. It is a favourable crop to seed down with. It is sometimes attacked by the wheat-fly or one very similar. The first prize for Barley has come twice, and the second twice to this township, at the Provincial Show.

**Oats.**—This crop is only grown in sufficient quantities for home use, little or none for export. They are mostly sown on wheat or barley stubble, but sometimes on green-sod and clover lea; they are, on the whole, a pretty certain crop, not much subject to blight or the ravages of insects, though they were attacked by the grasshopper, (as stated above) some years ago, and to some extent by the Army Worm and aphid last year. The white varieties are mostly grown, though the black ones are to some extent; the Potato, Hopetown, Berlin, and other heavy kinds have been tried, and though they yield very superior samples, yet we believe they are found not more profitable than the common kinds. At the Provincial Shows, the first prize twice, and the second prize three times, have been awarded to this township.

**Peas.**—This is an important crop, not only for feeding purposes, and for export, but also as a preparatory crop for wheat. They are sown after all kinds of crops, but mostly on land that has been in hay or pasture the previous year. Generally the land for peas is ploughed in the spring; they are often the first crop sown. They are sometimes damaged by mildew, never much by insects, though some years they are a little *buggy*. Of this crop there are many varieties, the Whit's Creeper being most common. Some of the early varieties are sown by some farmers for the United States market. The large Marrowfat peas were grown largely at

one time, but they have not been so much sown lately. The Black-eyed Marrowfat is at present a favourite and productive variety. The first prize for Marrowfat Peas was taken once in the township at the Provincial Show.

**Rye.**—Of this crop very little is grown; what is is generally sown on some of our light soils. Its cultivation is rather fallen off in late years. We believe it is not subject to the attacks of insects.

Of *Buckwheat* still less is grown, and that generally in small patches for family use.

**Indian Corn** has not been much grown, as it is not a crop on which our farmers place much dependence; what is grown is mostly for family use, and for feeding purposes, for which it is very useful and convenient. We think it deserves more attention at the hands of our farmers than it receives, as it is a good preparatory crop for wheat or barley, and can be used as a fallow crop for cleaning the land with.

### Canadian Timber at the International Exhibition.

The following description of the woods of Canada in the International Exhibition, is from the *Gardener's Chronicle* of June 14th, and probably from the pen of its accomplished conductor, Professor Lindley. Our readers will perceive that a permanent mine of wealth is to be found in our forests, if properly managed, and that our commissioners to the great Exhibition have executed their duty in an efficient and praise-worthy manner. That with our cereals and other productions, natural and artificial, notwithstanding the very small and inadequate sum of money given to the enterprise by our colonial government, enough has been accomplished by economy and good management, to show the world that Canada is not that country of ice and snow, with which it has too long been associated in the popular mind:—

"The visitor to the International Exhibition who shall seek for timber will see on his right in the distance, as soon as he enters the Eastern Dome, a noble pile reaching nearly to the roof of the transept. When he approaches the pile, he will find that its base is surrounded by most admirable examples of what Canada can produce; for he is within our great North-East envy American Colony, the pride of England, the of the United States. There is not such another display from the New World; and when we consider how near is Canada to our own shores, the rapidity of intercommunication between us, and the enormous wealth which this "trophy" represents, it is difficult to avoid feelings of something like triumph at such a demon-

stration of British power. And yet there are those who would pull the trophy down, because, forsooth, it is thought to stand in the way of a painted window. We have not, however, sunk to such effeminacy as to prefer tinsel to iron, or to sacrifice the interests of millions to degenerate taste. For ourselves, we own that we admire the work of the Almighty, even in the rude form of timber, very much more than any combination of blue, red, and yellow glass in the cathedral window. And so does the intelligent part of the public.

To planters in this country the exhibition of timber in Canada, is particularly interesting, because not a tree is represented in it with which we are unfamiliar. We can grow them all on our own estates if we think it worth while; and, given time enough, we can grow them as well. More especially does it concern those who already possess old specimens of Canadian trees to study here the evidence of what they may come to. Take, for example, Black Walnut, which grows magnificently even near London. There is one specimen (No. 53) which is four feet seven inches in diameter, exclusive of its bark. Such timber can be had in Quebec for £71 per 1,000 feet cube. The specimen to which we now refer must be about 400 years old.

North American Elms thrive perfectly with us. They are, however, we believe, exclusively *Ulmus Americana* and *fulva* that have been introduced. We now see that another kind, called the Rock Elm, or *Ulmus racemosa*, is superior to them and to our own; the wood being finer in the grain and less brittle. Of this there is a specimen, about 2 feet 8 inches in diameter.

Weymouth Pines are among the commonest of our hardy conifers. They yield the "Pine-wood" of carpenters. Little, however, do our foresters know of the huge specimens that swarm in Canada. "Average height 140 to 160 feet; average diameter, 3 to 4 feet; but common near Lake Erie 5 to 6 feet in diameter and 200 feet high; or even in some cases 22 feet in circumference, 220 feet high, bare of branches for 120 feet to the first limb." Such monsters are, however, too big to exhibit, and Canada modestly limits herself to about 2 feet 10 in. or three feet in diameter.

Then there is *Pinus resinosa*, or the Red Pine, which dislikes our eastern climate, 3 feet 6 in. in diameter, which is about twice its usual size. But there is no encouragement to plant it here.

The Ash of Canada (*Fraxinus Americana*) famous for its toughness and strength, invaluable for the handles of axes and other implements, is displayed in its small forms as well as in the giant proportions that it assumes when full grown. One round, with 305 circles of annual growth, is 2 feet 10 in. in diameter, an admirable example of timber.



There is Oak, too, (*Quercus tinctoria*), red (*Q. rubra*), and white (*Q. alba*), the latter little inferior to British heart of Oak, and not far off 4 feet in diameter. This tree, as much at home with us as with Canadians, is said to be sometimes 21 feet round! in Western Canada.

Then we have Occidental Plane, or Button Wood, 4 feet through; Tulip tree or White Wood, 3½ feet, and Bass wood or American Lime, more than 2 feet, all excellent for cabinet and joiners' work, though unfit to bear exposure to weather.

Add to these numerous specimens of the fair growth of American Chestnut, Hickories, Maples, Beech, Birch, Hornbeam, Hemlock, Spruce, Tamarac, or American Larch, and he who would thoroughly understand the nature of Canadian timber has a field for serious study hitherto unexampled: how serious in a mercantile point of view, may be gathered from the fact, that Canada exports annually about 30,000,000 cubic feet of timber in the rough state, and about 400,000,000 feet, board measure, of sawn timber. The revenue derived by the Province, during 1860, for timber cut in the forests, amounted to about \$500,000." It appears that of the 60 or 70 varieties of woods in its forests, there are usually only five or six kinds which go to make up these exports so vast in quantity; the remaining fifty or sixty timber trees are left to perish or are burned as a nuisance, to get them out of the way. The Commissioners truly observe that by showing in the markets of the world, that it has these valuable woods, and can furnish them at unprecedentedly low prices, will secure additional purchasers, a result that the capital display in the Exhibition building is admirably adapted to secure. The Commissioners from the Colony state that in extent, and in the value and variety of its woods, the great forests of deciduous trees of North America surpass all others; the most remarkable of this great mixed forest being that grown in the valley of the St. Lawrence. The western coasts, in high latitudes, furnish only or chiefly the Coniferae. High summer temperature and abundant summer rains, are unquestionably, the conditions necessary to produce the deciduous forest trees. Western coasts, in high latitudes, have the necessary moisture, but not the high summer temperature; Western prairies, east of the Mississippi, and the vast deserts west of it, have summer heat but not moisture; hence the absence of all trees in one region, and of the deciduous trees in the other. In this country we have probably all the conditions, except time, under which the Canadian timber has been produced.

All the hardy trees belonging to the Canadian Exhibition are capitally shown, by the production of both "rounds" or transverse sections, and planks, so that the grain may be examined in each direction; and we only do justice to the Canadian Commissioners when we point out the

skill of their arrangements; not forgetting their excellent Catalogue, which has afforded us some part of the information now laid before our readers.

In the other North American colonies the timber exhibited is merely in the form of hard specimens if produced at all. That of Vancouver and British Columbia is still at sea, with the exception of a few examples from the form, among which will be found the unsurpassable Douglass Fir, to which we have lately drawn attention on several occasions, and the Cypress of the settlers, a beautiful white wood would be produced, we believe, by *Thuja gigantea* (*Libocedrus decurruns*.)

#### OPINION OF THE DUKE OF NEWCASTLE.

Subjoined is a circular letter addressed through Dr. Lindley, Colonial Superintendent, to the several Colonial Commissioners, by His Grace the Colonial Secretary, which will be read with interest.

"DOWNING STREET, 4th June, 1862.

"My dear Dr. Lindley, Now that the Colonial Department of the International Exhibition is very nearly completed, I must express to you, first, my thanks for the trouble you took in showing me the various productions, and, next, my extreme admiration of the spirited and successful manner in which the colonies, with scarcely an exception, have responded to the invitation of the Commissioners to send specimens of their natural produce and industry for the information, and, I may well add, the instruction of the nations of Europe.

"It is impossible that such a display of what the Colonial portions of the British empire can produce should be without a very material influence upon the future prospects and prosperity of each of them. In gold and other metals, in cereal produce, in timber, in wool, above all in cotton, the visitors of the International Exhibition will find the English colonies eclipsing all competitors; and I am much mistaken if foreigners will not find in the department allotted to them more to excite their admiration and wonder than in the more showy and artistic displays, which do so much credit to the taste, energy and manufacturing power of the mother country.

"I assure you that not only officially but individually I am delighted at the position before the world which the Colonies have assumed at the Exhibition.

"I am, my dear Dr. Lindley,

"Your's very sincerely,

"NEWCASTLE."

The seed of winter wheat retains its germinating powers from three to four years, of spring wheat two to three years. oats two years, beet-root six to seven, swedes five to six.

### Irrigation for Grass Lands.

We are again amid the fervid heats of July, the hottest and oftentimes the driest month of the year. One now only needs to look over the parched fields, especially in a dry season, to understand the need of irrigation. Even in seasons of average moisture we could use to advantage many times the quantity of water that falls from the clouds. It would always make the hay crop a certainty, and often quadruple the yield of grass in the irrigated fields. It was not strange that the Romans living under the bright skies of Italy, early found the advantage of damming their mountain streams, and turning them at pleasure upon the meadows below. It would seem from the account of Virgil, that whole districts were famous for the crops procured mainly by this method. Irrigation must have been an art well understood long before the Christian era. Is it not strange that in a climate quite as much subject to drouth as that of Italy, irrigation should be almost unknown among us? With a climate that demands it, and with unrivalled facilities for its practice, in most of the northern States, not one farmer in a thousand has availed himself of the treasures of water within his reach. Nothing could better show the neglect of agriculture among us as an art than this fact. Few people are more ingenious than ours, or more quick to take advantage of the facilities which Nature offers to save labour and to create wealth. We abound in all useful inventions and labour-saving machines.—We dam the streams to turn innumerable wheels for manufacturing purposes; to make fish-ponds and adorn our ornamental grounds; to make model lakes and raise our annual crop of ice, for the delight of Europe and the Indies. But how rarely is a stream turned from its course to fertilize the land and increase our harvests.

Few have any conception of the value of water as a fertilizer. Many turn the streams made by rains in the highways into the adjacent fields, but they attribute all the increased luxuriance of the grass to the matter deposited. No doubt street refuse, such as the rain washes into the meadow, is an excellent fertilizer, but the rain itself contributes to the result. Far beyond the line of deposit, you see the effects of the water.

Just how the water operates to fertilize the soil we may not be able to state. Of the fact there can be no doubt. We see the power of water to make crops in every drouth that comes. There are fields of light gravelly soil, whose crops of grass are nearly doubled in wet seasons. It is pretty safe to infer that water made the difference. Water is a powerful solvent, and helps the decomposition, not only of vegetable fibre in the soil, but of its mineral constituents. You can not wash a stone so clean that water will not act upon its surface, and after a few hours wash away something more from it. It is prob-

able that the water is all the while preparing plant food from the soil where it is present, and of course the more of it we pass through the soil, the more nourishment the roots of plants are enabled to take it up.

We have recently examined two small valleys, flowed for skating during the winter, and drawn off in early spring. In both you can detect the water line in winter by the greater luxuriance of the grass. Both streams that fed these ponds are dry, or nearly so, in summer, and never carry any very large volume of water. The basins that contain the water are small, and mostly covered with grass, so that they are turbid even in rains. There is little appearance of sediment when the water is drawn off in the spring, and it is nearly certain that the beneficial effect is mainly owing to the presence of water in the winter season. If the water helps the grass crop under these unfavourable circumstances, it must help it much more when it bears a rich deposit, and is applied at the growing season.

We have in this State two examples at least, of the successful application of irrigation to farms—that of A. B. Dickinson, of Steuben Co., and L. D. Clift, of Putnam Co.; accounts of which were published in the *Agricultural Transactions* for 1855. In both these cases, the method is simple and the expense not beyond the means of the most thriving farmers who have streams convenient for this purpose. In both, the results are all that could have been anticipated. The method is to dam the stream at a point above the lands to be watered, and to turn it on at pleasure, by means of a gate and channels of distribution. These main channels are furnished with side conduits which are merely furrows made with the plow, and having just descent enough to carry the water. When the water is turned on, these channels overflow, and the water is distributed over many acres.

Mr. Clift pursues his irrigation even in winter, and it is this feature probably that will be looked upon with more hesitation than any others. The water freezes sometimes as it flows, making a broad field of ice a foot or more in thickness, where it remains until dissolved by the suns of spring. It is probable that the ice affects the soil thus protected just as the ice-covered pond does. It is completely shielded from the alternate thawing and freezing; the frost does not strike in deeply, and comes out very early in the spring. It is his testimony that "the grass in all such places is first in spring, and grows with great rapidity." He also improves other seasons when the stream is charged with sediment, and spreads it over the land as a top dressing. Besides the sediment which is carried in the water, a good deal collects in the bottom of the pond, which is carted out when the water is drawn off, and makes excellent manure. This is spread upon portions of the field that receive the smallest supply of water. He cuts above a hundred tons of hay on forty acres of land,



which is certainly double the average for the mowing land of the state, and uses no other manure.

Mr. Dickinson makes great account of increasing the natural deposit of sediment by artificial means. He plows and harrows land that is to be overflowed, and stirs up the soil after it is under water to make it very muddy. Even the subsoil that is thus spread over grass land is found to be an excellent fertilizer. His grass crops are enormous, and the best possible commentary upon his method of irrigation.

Now we have thousands of farms all over the country quite as well, or even better situated for artificial watering than these. In many cases a few days' labour by the ordinary working force of the farm would make a pond and the necessary channels for watering a few acres. The work once begun would demonstrate its economy and lead to the watering of all the available portions of the farm. Lands that are now an incumbrance, hardly paying taxes, might be brought into a high state of productiveness. We call the attention of our readers to this very important topic at this season, when the scythe sweeps so many acres prolific in five-finger and briars, but poor in grass. Cheap and careless irrigation pays, and the more systematic and perfect it is, the better it pays, as a general rule. Use our streams rightly, and we shall find them richer than Pactolus, plowing over golden sands. —*Agriculturist*.

### Economy in the Preservation and Storing of Manure upon a Farm or Garden.

The following statement will, it is hoped, be found interesting to your readers. It is based entirely upon experience gained during the last 10 years, in which the following practice has been observed, viz. :—

In the autumn in each year, immediately after harvest, all the hedges and ditches upon a farm of about 500 acres of mixed gravel and clay land are trimmed and cleaned, and the whole consumed in one or more large heaps by charring or smother-burning, great care being taken that the wood, rough grass, and weeds, of which the heap is composed, is sufficiently covered from time to time with earth to prevent the escape of any flame; and as the heaps are consumed, daily additions of a further quantity are made, as much earth being charred as possible. The whole having been thus converted into a well-burnt mass, by which means the weeds and waste are cleared up and the farm made neat, a most valuable heap of material for the preservation and economical storing of manure applicable to root and other crops is obtained at a very trifling cost.

When the heap is cold it is carted and placed under an inexpensive shed made of very rough materials, viz., oak posts fixed into the ground,

with rough larch poles for the plating and rafters. The covering is composed of the chips obtained from the hoop-maker, but the roof may be covered with any material most easily and cheaply obtained. The advantage of chips or straw is, that the covering is warm for the fowls, which are made to roost in the roof, so that the powerful manure from them may be economised and preserved for use.

It is probably well known to all your readers that charred or burnt earth, cinders, ashes, &c., are complete deodorisers, and all offensive substances thrown into the heap become, in the course of a few hours, entirely free from smell. The first shed erected for the purpose above described did not cost more than £5. It was constructed of a few poles with a roof of thatched hurdles put up by a hedge carpenter. This fact is mentioned to show that no one need be deterred from adopting the system by reason of expense. When the ashes have been placed under the shed, all the refuse of the house and premises, which in most cases is entirely wasted, is thrown upon or amongst them. The urine from the house is removed in a vessel kept for the purpose. All the blood and animal refuse, &c., are thrown into the heap, as also the soil from privies, and in the course of a few hours any offensive smell is entirely destroyed. The manure thus made during 12 months has been found sufficient to provide a good and cheap dressing to be drilled in with the root crops, and excellent results have been obtained—as many as 40 acres in one year have been thus manured.

Having by experience ascertained the complete deodorisation of all offensive substances by being mixed with burnt earth, the material has since been used for destroying all unpleasant smells in stables, cow-houses, and pig styes, with entire success. Buildings which would otherwise smell very strongly are rendered as free from offensive savour as any dwelling-room. The burnt earth is placed all over the floors to the depth of about  $1\frac{1}{2}$  to 2 inches, and is occasionally moved up with a pointed tool. All liquids are absorbed and deodorised, the solid portions of the excrements are daily thrown into the adjoining yard. When the burnt earth is fully saturated it is removed to the shed, and another covering is substituted. Not only is all the liquid manure thus secure and economised, but the health of the cattle is better provided for. Although scarcely necessary to refer to the expense of the above operations, it being exceedingly small, yet it may be satisfactory to some to have data from which the cost may be calculated :—

1. The clearing of the hedges and ditches is a necessary work upon all well managed farms, whether the rubbish is burnt or not.

2. The carting into heaps for burning, and the subsequent removal to the shed, is done with the odd horse or pony and an old man.

3. The collection of the refuse and waste of the house, &c., is easily done. The household servants place their portion of the refuse in a vessel provided for the purpose, and the cowman or odd man removes it to the heap once or twice daily.

4. The distribution over the land is done by means of the drill, as any other manure of a like kind is spread.—*Gardener's Chronicle*.

### Hydropathy in the Garden.

We gave our readers some suggestions in a late number, on the importance of Irrigation in the growth of farm crops, and inviting further inquiry and experiment. We now wish to direct the same kind of inquiry to the management of the fruit and vegetable garden.

The application of water artificially appears to have a useful effect on all crops that grow better in moist than in dry seasons. Meadows, for instance, as every one is aware, produce the largest growth of grass when we have plenty of rains, and are light when the early part of the season—the period of most rapid growth—is dry. Farmers are familiar with the fact that wet swales give a heavier crop of grass, than dry knolls. And some have witnessed examples where the streams from clear springs, flowing in a slow current downward over meadow land, have marked a heavy growth on this watered streak. Rain or spring water, clear or turbid water, will always increase the growth of grass, if not in excess. (Wet, cold, water-soaked places, are often observed to give little else than coarse or sedge grasses—and they furnish examples of the evils of excess). An example is familiar on our own grounds where a meadow lay between the fork of two large creeks—partly flats and partly upland. One stream was always very turbid at the time of high water, the other clear. That portion of the meadow washed by the former was uniformly the heaviest, yielding usually three tons of hay per acre, and often more; the other about two and a half. The higher land, similar in quality, but not overflowed, yielded rarely over half a ton, and the line of demarcation between them (the line between the flowed and unflowed,) was as distinct as possible. The whole proved conclusively the benefit of water alone, and the superior benefit of a thin deposit annually of simple mud, which had no fertility in itself greater than other soil.\*

These remarks do not however apply to the subject in hand, for heretofore to illustrate general principles. We may add, that discrimination is essential in watering different crops. The wet

swale, for example, which will afford the heaviest grass, may produce the poorest corn; yet there is still a certain amount, but much less quantity of moisture essential to corn, for it may be parched and dried by extreme drought.

All vegetables which will receive high manuring, are improved by irrigation—such for instance, as celery, asparagus, rhubarb and cabbages. But the amount must be determined by judgment or some experience, and vary with the nature of the season. All who are familiar with the culture of the strawberry and raspberry, will remember the reduced size and inferior quality of both these fruits when a severe drought has occurred during the time of their ripening. We have known a heavy rain at such time, to double the size of the ripening Franconia raspberries, in two or three days. We have also seen ripening strawberries, placed accidentally under the slow drip of a water cart, doubled in size in twenty-four hours. The artificial watering has this advantage over the irrigation of rains—in being accompanied with no exclusion of warmth and sunlight—an exclusion usually attendant on natural watering, and rendering some of these fruits sourer and less palatable in wet seasons. As a general rule, fruits of a high and concentrated flavor are rendered more pleasant by the diluting which they receive by irrigation; and seedy fruits, as some kinds of raspberries, are rendered more pulpy in the same way.

A late number of the Boston Cultivator contains an account of some experiments reported by Artemus Newell, of Needham, Mass., to the Norfolk Agricultural Society, on irrigating strawberries growing in a pear garden. A few acres of dry gravelly ridge were planted with dwarf pear, nine feet apart. Between each row, a bed for strawberries was formed, by back-furrowing very deep to the centre, thus making the bed three feet wide, with a furrow between each bed and row of trees, for the water to run in when needed. The water was let into a main channel which passed on the higher side and nearly at right angles to these rows. Between this channel and the rows a plank was placed, set on edge, with a hole bored for each furrow between the pear rows and strawberry beds. A cork placed in each hole regulated or excluded the water at pleasure. The water passed off at the lower side, and irrigated a meadow.

The results were, the pear trees made twice the growth of wood when well irrigated. The difference in the luxuriance of the trees could be seen at a long distance. "The best trees are where there is irrigation on the surface, and drain pipes laid directly under them, four feet below." We copy the statement of the mode of planting the strawberries, and the effects of the water upon them:—

"Strawberries I plant between the rows of pear trees, in deep, light beds three feet wide only. By this arrangement the soil is never

\* The same principle,—the benefit from a thin surface coating of soil on grass, has been proved by scattering fine soil over the surface artificially. Farmers are familiar with the strong and early growth of grass along the borders of corn and other cultivated fields, where earth has been scattered accidentally in turning the harrow or cultivator at the ends of rows.



trodden down either in planting, weeding, trimming, or picking the fruit, and they are much more easily kept from weeds. The beds are liberally supplied with strong manure, placed in one deep furrow in the bed, at least one foot below the surface. One row of plants is set directly over the manure, the plants fifteen to eighteen inches apart. They are set in the month of May. The hole for the plant is made with a tool like a marlin-spike, reaching down well into the manure. The roots are let down and the hole is carefully filled with fine earth without pressing, then soaked with water, and dry earth placed over the top to prevent baking. The effect of placing the manure so deep, is to carry the roots of the plant through the manure to the soil in a dry time, to entirely cover the beds by autumn with the most vigorous plants, and to keep the seeds of weeds and grass so low that they will do no harm. The fruit is mostly grown on the new plants, which have derived their vigor from the manure chiefly through the roots of the original plant, the runners of which are cut off in the spring for the purpose of weeding, &c.

Most of my strawberry beds are watered liberally by a constant flow of water along the channels, which have been described. The results are, that the berries are large and fair; they do not ripen quite as early, but continue in bearing much longer; the crop is certain, even in the driest seasons, when those on dry land are cut off—sometimes before half the crop is matured. In fact, I deem irrigation almost indispensable for the successful cultivation of strawberries in dry seasons."

The irrigation of the meadow doubled the amount of hay.

We may remark in conclusion, that while Irrigation cannot supply the place of manure and good cultivation, it will doubtless prove an excellent auxiliary, where it is practicable to introduce it; and so far as gardening is concerned, deep and enriched soil, and thorough and mellow culture, will go far towards preventing the effects of drought, where irrigation cannot be introduced. A combination of both would, if managed with judgment, produce excellent results.—*Country Gentleman*.

### Short-horns in France.

The short-horn breeders in England have every reason to be satisfied with the Poissy show—not that their herds were by any means well represented, but that no show in France has yet so thoroughly established the utility of the Durham breed as the last. Not only was every intelligent spectator convinced of the valuable results which had followed the introduction of foreign blood, but it was plain to them a continued importation is as essential to the

maintenance of the results as the original importation was to their inauguration.

The trade has now risen to considerable dimensions. The managers of the Government Dairy Establishments of Pin (Orne) and du Champ (Mayenne) were amongst the first to try the milking qualities of the breed. After this private enterprise commenced a spirited competition for pedigree short-horn cattle, the honour of the initiative belonging to M. le Marquis de Torey (Orne) and M. de Behague (Loiret). These gentlemen, however, were neither of them well placed to give much of a lead to public opinion: for one resided in a very backward neighbourhood, where the farmers had neither spirit nor money to follow a good example, and the other was placed in the vicinity of an indigenous breed, whose esteemed character rendered any effort to displace it most unpopular. In the departments Mayenne and Maine-et-Loire lying west of the great Oolitic basin of Paris, and composed generally of old red sandstone and granite rocks, this breed has made more way. Whether it has done so because the farming is better and the root crop is more attended to, or whether the improvement in culture has been the consequence of its introduction, it is difficult to say; it is sufficient to remark that these departments have lately made great progress, and that the Durham cattle have well nigh driven out the Mancelle, a local breed, or absorbed it, and are now to be found as much at home in the homesteads of the mere farmers as they are in some of the most thrifty parts of England.

It must not be forgotten that the result is much owing to the enterprise of Mr. Jamet, who, aided by the manager of La Vacherie du Champ, and M. de Falloux, a landed proprietor of considerable repute, and a successful exhibitor at Poissy, has maintained quite a crusade in favour of the Durham. Following this example, the proprietors of Anjou emulated each other, attended our sales, and carried back some of our finest types with which to found the true stock so well represented at Poissy. Attention has been already called in our report of Poissy to the Herd Book of France, with its 1,500 entries, and of the 143 established breeders; but we have yet to speak of the care exercised by these gentlemen in maintaining the purity of their standard. No animal is admitted to a place amongst the upper ten thousand save such as can show a descent on both sides from pure bred stock; both parents must be unexceptionable in their descent, or there is no admission amongst the privileged order for their progeny. This rule was strictly enforced at Poissy; for the jury displaced several aspirants to the peerage because they lacked, on they dam's side, a proof of nobility, and gave them rank amongst a lower, but very large class designated *Croisements divers*. This care is even carried further by the Emperor, who has directed that in future no

short-horn shall be purchased for the Imperial farms whose pedigree cannot be traced on both sides to the second volume of the English Herd Book.

All this precision proving the intense interest which is taken by our neighbours in the race, must, if correctly interpreted, be to the English breeder the source of the greatest satisfaction. Those who have returned from Poissy to tell their neighbours that the French are now so much masters of their business as to need no further tuition from us may be correct; but those who add to this assertion that the perfection of the pure breed of short-horns established across the Channel renders unnecessary any further importation of foreign blood, and henceforth closes our trade in that quarter, must have used their eyes to little purpose, or reasoned negligently upon the facts placed before them.

We know very well in England that no breed of sheep or cattle reaches the same development in the situations to which it is foreign as it does in those natural to it. We know that great mistakes are made in removing stock from one county to another where the circumstances of life differ, or from one side of the island to the other, where the conditions of climate are various. No short-horn breeder is unacquainted with the fact that certain parts of Yorkshire are better adapted to the short-horn than others, and that he is seen in richer bloom in his home pasture than he is anywhere else. It is for this reason that most prudent men when they want new blood like to go north for it. Now, theoretically, if these observations have any force as regards England, they must have much more when applied to France; and, in fact, we find they have. The English exhibited nothing very wonderful at Poissy, but yet the contrast was unfavourable to the French pure Durham. The latter wanted that development which characterised our own. There was nothing, for instance, at three years of age which could compare with Mr. Crisp's ox, or, unsatisfactory as he might be as the only representative in the steer class, with Mr. Holland's steer. We entertain the belief that many years must pass before the short-horn becomes so naturalised in France, should this ever occur, as to render the breeders there independent of a recourse to our herds. Were these gentlemen less particular than they are, ordinary development might suit them; but being so particular, nothing short of absolute perfection will please them, and to obtain this point they must continually return to us for new blood to counteract some certain effects of climate and soil disadvantageous to the growth of the imported breed.

Although the French were unmistakably proud of having accomplished so vast a stride in so short a time, and having arrived at such proficiency in the use of the weapons we placed in their hands, we met no breeder skilful in his art who was not ready to acknowledge, if judi-

ciously questioned, that a pretty frequent accession of English blood was requisite to preserve the French Durham from degenerating.

While, however, this enthusiastic attention to his art tends to make the French breeder a constant and large purchaser at our pedigree sales, it must be remembered that he comes as a discerning purchaser, and that if his custom is to be retained special attention must be here given to preserve the high character of the attraction which draws him.—*Agricultural Gazette.*

### Surface Manuring.

The practice of top dressing, or of surface-manuring, has long been the favorite method employed by all intelligent gardeners within the circle of my acquaintance. We have long ago learned that masses of rich, nitrogenous manures are not what plants require about their roots, but that manures are applied much more successfully (and less injuriously) by top-dressing, either in solid or liquid form. Nature never manures her plants with crude masses of concentrated fertilizing substances, but imparts her stimulating and mineral food in a state of the most minute division—almost infinitesimal!—chiefly from the surface of the earth. No wonder so many fruit trees have been killed, so many grape vines destroyed or rendered barren by excess of wood, in consequence of the heavy manuring at the roots so universally recommended by writers on gardening and horticulture.

The great objection to surface-manuring is founded upon the probable loss of ammonia, caused by the exposure of decaying manures upon the surface of the earth. But this loss has been shown, by sound reasoning and by facts deduced from practical experience, to be much less than is commonly apprehended; while the benefits arising from surface-manuring, in other respects, more than counterbalance any possible loss of ammonia from this practice.

In the first place, when manures are exposed upon the surface of the earth, even in hot weather, decomposition no longer goes on so rapidly as when the same manures are kept in a heap, and the ammonia that is produced is gradually carried into the soil by rains. The other soluble substances, as potash, lime, the phosphates, &c., are of course not lost, because they are not volatile.

Nor are these soluble and valuable substances lost to plants by being carried into the soil before they are needed by growing plants. It has been conclusively shown by eminent scientific authorities that any good soil, containing a fair proportion of clay and carbon, is capable of taking up and retaining effectually ammonia, lime, potash, soda, &c., in a soluble form, so that little, if any, passes off in the under-drainage water of such soils. These substances, it is true, may wash from the surface, but they can-



not pass through a good soil and go off in the drainage water.

By surface-manuring we mulch the ground, and render it cooler in summer and warmer in winter. More shade is an important element in culture—so important that some writers have thought shade alone to be equivalent to manure. A piece of soil heavily shaded by surface-manuring actually decomposes like a manure heap—that is, it undergoes a sort of putrefaction or chemical change, which sets free its chemical constituents, unlocks as it were, its locked up manurial treasures, and fits its natural elements to become the food of plants. Darkness, moisture and air are the conditions required for vegetable and mineral decomposition. These conditions are produced in the soil by surface-manuring.

Then, again, when the surface-manure decomposes, its elements are washed into the soil in a state of solution precisely-fitted to meet the wants of plants, and they become themselves active agents in promoting further decomposition and chemical changes in the entire body of the soil.

Manure, then, I say, chiefly upon the surface. Do not waste your manures by mixing them deeply with the soil. Plant shallow. Keep roots of all trees, plants, and vines as near the surface as possible. There are weighty reasons for the position assumed in the last sentence, which I have not space now to enumerate. I say again plant shallow, Let your soil be deep and dry, but plant near the surface as much as possible. Top-dress your grass, after mowing in July and August, under a burning summer sun; top-dress in the fall, before and during the autumn rains: manure the surface while snow is on the ground, while the March wind blows, and while the April rains fall. Manure your grass, instead of your corn and wheat, broadcast, at any time when you have manure and leisure, and I will guarantee that you will be abundantly satisfied with the result.

To fruit-growers I would say: Do not fill your soil with manure before you plant trees, grapevines, &c. Plant in good natural soil, and manure from the surface, spring and fall, liberally and properly, and I will guarantee you success far greater than if you plant in holes and trenches filled with manures, as the custom is. Surface-manuring and mulching are the true doctrines. I am sure of it.—*Gardeners' Monthly*.

### Natural Food v. Medicine.

What, then, are the medical plants comprised in the natural food of our cattle? What are the medicinal or active principles of such plants? And what are the functions such principles perform in the animal economy?

Owing to the very limited progress which organic chemistry has made in the analysis of the

plants consumed by cattle as natural food, on the one hand, and in the analysis of the beef, mutton, and pork into which such natural food is converted on the other hand, only a very general answer can be given to these three questions, especially the latter two. As to the first the conclusion, in a general sense, is manifest; for as all plants contain medicinal principles, it consequently follows that all the plants eaten by cattle are medical plants. It is only, however, when plants possess active medicinal principles in sufficient quantity to produce certain observable effects upon individual organs—as the kidney, the liver, or any other specific function—that they are acknowledged as medicinal, and are adopted into the *Materia Medica* of the medical profession. Thus, oak-bark contains a large per-centage of the astringent principle, and is consequently adopted into the *Materia Medica*; whereas many grasses contain the same astringent principle, but in so small a per-centage as to be unsuited for medical use, and are therefore not adopted. Along with astringent principle, other barks possess aperient and diuretic properties, as the bark of the ash and elm, and are adopted; but the grasses that contain similar properties, but in small quantity, are not adopted. Again, many of the condimental plants of our natural pastures that are eaten in small quantity by cattle, and relished by them as condiment, are adopted into the *Materia Medica*, because the per-centage of active principles is sufficient to produce specific action. Thus, tansy is a bitter tonic diuretic, and is eaten by sheep, but shunned by the horse and ox. Tormentil possesses even more astringent principle than oak bark and is eaten by sheep and pigs. There is, in short, a long list of medical plants possessing astringent bitter, tonic, aperient, diuretic, and diaphoretic properties, that are eaten, but only in small quantity at a time, the purposes they serve in the dietary of cattle being evidently condimental; indeed, there are very few medical plants that are not comprised in the natural food of our domesticated animals.

With regard to the peculiar functions which the different medicinal principles perform in the animal economy, such as tannic and gallic acid, bitter extractive matter, &c, little is yet known, chemically speaking; but that the all-wise Creator has given them a chemical purpose to serve is manifest from the fact that when the food of cattle is deficient of those principles they lose health, the different organs which are affected by such principles, when present in the food, ceasing to perform their functions normally when such principles are wanting, or are deficient in the food. Until chemistry makes the necessary discovery in the laboratory, so as to be able to solve satisfactorily the chemical question, we must rest contented with the medical solution of the olden time, as acquired by ex-

perience, viz., that those principles that produce cathartic action are cathartic, and are required for some wise purpose in the process of digestion, assimilation, preservation, and defecation in small quantity in the daily food of every animal—that tonic principles are required to keep up the tissues in a normal state of tonicity, so as to enable them to perform their functions. Thus the muscles of the stomach and intestinal canal and the muscles of the heart require tonic principle to counteract the relaxing principles of the respiratory elements of food, so as to preserve their contractile powers at the normal standard; that the kidneys require diuretic properties, the skin diaphoretic, the fluids antiseptic and refrigerant, to prevent abnormal change; and so on throughout the whole list of medicinal properties and their innumerable combinations. Because man is not so well informed in organic chemistry as his Maker is no valid reason for him becoming a sceptic to the chemical solution of what we see daily solved at the bar of experience, in the natural providence of things, and which can be thus solved at the bar of experience as often as we please, in accordance with the established deductions of medical science, especially since the progress now being made in chemical analysis is annually approaching nearer and nearer to a satisfactory solution of the chemical question itself at its base.

In the common language of practical farmers, the medicinal principles of the grasses and other plants eaten by cattle are their odorous and sapid properties. All attempts hitherto made to classify them under such heads as bitter, saccharine, saline, astringent, acid, aromatic, foetid, acrid, alliaceous, musky, &c., &c., have failed. When several of them are combined or present together in one plant, as they generally are, such as saccharine, saline, bitter-acid, and aromatic, it is not very easy distinguishing the one from the other, or saying which may predominate, or how many may be present in one plant. But, with the peculiar smell and taste of such plant farmers are familiar; and also with the fact that the quality of these odorous and sapid properties are very different under different seasons, and under different modes of management and circumstances connected with the harvesting and using of them. They are also familiar with the fact that the value of these plants as feeding materials is dependant upon the fineness of the quality and the largeness of the quantity of the odorous and sapid properties, or natural condiment which such feeding materials contain when given to cattle. There are, in short, no facts in connection with farming that are based upon a more solid foundation than the medicinal properties of the food of cattle, and their dietic value.—*Mark-lane Express*.

Fully one-half of the money value of rape and the best cotton-seed cakes is obtained back again in the manure.

## Agricultural Intelligence.

### Agricultural Exhibitions this Autumn.

#### PROVINCIAL AND STATE.

Upper Canada, at Toronto, September 22nd—26th.

Lower Canada, at Sherbrooke, 17th, 18th 19th September.

New York State, at Rochester, September 30 to October 3rd.

Illinois State, at Peoria, September 29 to October 4.

Ohio, at Cleveland, September 16 to 19.

#### COUNTIES.

Stormont, at Cornwall, Oct. 8th and 9th.

North Simcoe, at Barrie, Oct. 1st.

Brockville, at Brockville, Sept. 18th and 19th.

South Simcoe, at Bradford, Oct. 2nd.

Durham West, at Newcastle, Oct. 9 and 10.

North Lanark, at Almonte, Sept. 16th.

Russell, at Osborne, Sept. 30th.

### Importation of Cattle.

We learn with pleasure that Mr. Simon Beattie, of Markham, who left here for Scotland in the beginning of last winter, has returned with a good lot of picked cattle, and other kinds of stock, for the improvement of the breeds in this country. Mr. Beattie had a very rough and tedious passage out. The weather was very severe and squally, with head winds and a good deal of rain. He left Annan, Scotland, on 14th April, and was nine weeks and two days from that port to Quebec, reaching home from thence on the 21st ultimo. The cattle, however, we understand, fortunately escaped any serious damage. The stock brought over by Mr. Beattie is as follows:

A thorough bred stallion, 5 years old, sired by Grey Plover, gr. sire Irish Bird-Catcher, g. gr. sire Sir Hercules: dam by Corona, gr. dam Repartee by Pantaloon, g. gr. dam by Touchstone, &c.

Two Durham 2 years old heifers, bred by Mr. Robert Syme, Red Kirk, Dumfriesshire, both sired by General Havelock, (16130), and out of pure short-horn dams of Mr. Syme's breeding.

Six head of Ayrshire Cattle, viz: 1 cow, 2 two years old heifers, and two bull calves. The cow and one of the bull calves from the stock of Mr. Anderson, near Ayr; the heifers and the other bull calf from the herds of Mr. McKirdy, and Mr. Hamilton, Lanark.



Thirty-four head of sheep, consisting of 22 Leicester rams, and 10 ewes of the same breed, all from some of the principal breeders in Yorkshire; and two Southdown ewes from Mr. McConnell, Dumfriesshire, bred from the Duke of Richmond's stock.

Of pigs, two sows and one boar of the Yorkshire breed, about six months old.

Poultry, about a dozen of the best Dorking and Black Spanish fowls.

### Adulteration of Manures in France.

The adulteration of artificial manures and guano has attracted the attention of the French government through the efforts of M. Adolphe Bobierre, who has been appointed chemical analyzer of manures for the department of the Loire Inferieure, an institution established by the government. The gentleman has addressed a detailed report, in the highest degree interesting, to agricultural science and to the body of cultivators. He was the first to call the attention of the authorities to the flagrant frauds perpetrated in the manufacture of manures, and to the numberless deceptions to which the trade gave rise. In consequence of his representations, the administration, in order to protect the ignorant and credulous husbandman, founded the institution alluded to, and justly appointed M. Bobierre the first analytical chemist; and the report that distinguished savan has drawn up fully justifies the selection. In it he has laid bare the fraudulent tricks of the manufacturers to deceive both the analytical chemists and the agriculturists. For instance, in the article of animal charcoal, they profess to sell it as containing 40 per cent. of phosphate of lime. They send the article *weighed*, in a dry state, to the chemist, who accordingly finds it contains the alleged proportion. But with the dry material the merchant mixes water, according to the tenderness of his conscience, and then *sells it by the hectolitre (or measure); instead of the kilogram (or weight)*; and thus the buyer and the chemist are both mystified beyond any redemption. But, in order more effectually to conceal the fraud, light, spongy substances, such as carbonized peat and other similar substances, are mixed with the animal black, and absorb the water, making it impossible, without another analysis, to detect the fraud, which, as shown by M. Bobierre, reduces the proportion of phosphate of lime to 19 per cent., instead of 40. We trust this report will be translated into English, and circulated through the agricultural journals, amongst the farmers, who cannot be too much instructed as to the set of harpies by whom they are assailed, in the shape of artificial manure manufacturers.

—Mark Lane Express.

### To Improve Sandy Soils.

The defect in such soils is chiefly of this sort: They are mechanically defective, being so light and porous that they cannot retain moisture, or manure, if applied. Besides, they are generally wanting in various important elements of plant growth. Therefore, to improve them, we must endeavour to supply these radical defects. The first point can be gained by spreading a coat of clay over the surface and dragging it in. This will improve its texture, and will also impart fertility. Adhesiveness and strength having been gained, manure from the barn yard may be applied as fast as it can be procured. Another method is to dress such lands with rough composts. Prepare the heaps at leisure, in the barn-yard. The ingredients may be such as these; ten loads of stable dung mixed with five loads of clayed soil, twenty bushels of ashes, and the same amount of lime. After these articles have been well incorporated, let the mass lie for a month or two; then it will be ready for use. Such a compost, it is easy to see, will be more enduring, and better in all respects, than the same bulk of barn-yard manure. It will improve the quality of the land permanently, and will enrich it with a fertility which will be very lasting. On every farm of the kind here supposed, there should be one or more compost heaps of some sort *constantly* building—*Agriculturist*.

### An Agricultural College Bill in the United States.

The recent U. S. Congress has passed three important acts for the encouragement of agriculture. These are the Homestead bill, the Bill creating a "Department of Agriculture" and the recently passed Bill providing for the establishment of Agricultural Colleges.

The latter bill in brief is as follows. It provides a grant of public land to be proportioned to each State, in quantity equal to 30,000 acres for each Senator and Representative in Congress, provided that no mineral lands are selected or purchased under the provisions of the act. The proceeds of these lands go to the "endowment, support, and maintenance of at least one college in each State, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and the Mechanic Arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." The further provisions of the act are, that the capital of the fund shall remain forever undiminished, and the annual interest be regularly applied to the purpose above

specified; that no portion of said fund, nor the interest thereon, shall be applied, directly or indirectly, under any pretence whatever, to the purchase, erection, preservation, or repair of any building or buildings: that any state claiming the benefit of the provisions of the act, shall provide, within five years, at least not less than one college, as above stated, or the grant to such State shall cease, and said State shall be bound to pay the United States the amount received of any lands previously sold, and that the title to purchasers under the State shall be valid; that an annual report of the doings of each college shall be published, such report recording the improvements and experiments made, with their costs and results, and such other matters, including state industrial and economical statistics, as may be supposed useful, that no State while in a condition of rebellion or insurrection against the Government of the United States, shall be entitled to the benefits of the act; and that no state shall be entitled to the benefits of the act, unless it shall express its acceptance thereof by its legislature within two years from the date of its approval by the President.—*Maine Farmer.*

**WOOL EXHIBITION.**—The Ohio State Agricultural Society has made arrangements to have a great exhibition of wool at its Fair, which is to be held at Cleveland, September 16th to the 19th. —The Ohio Farmer says, "Four classes have been arranged, comprising Felting Wools, Delaine Wools, Cassimere Wools and Combing Wools. In each class there are to be three premiums, of \$20, \$10 and \$5, respectively. None but actual growers are allowed to exhibit, and competition is open to all parts of the United States and Canadas. Samples must not contain less than twenty fleeces. The awarding Committees are partly composed of experienced Eastern manufacturers and practical Western wool men. A capacious building will be erected for the convenience of exhibition, and a wool sale at auction will close the Fair on the Friday afternoon."

## Horticultural.

### Black Wart in Cherry Trees

TO THE EDITOR OF THE AGRICULTURIST.—I have this day cut down about the last of my common tame cherry trees, on account of the fungus or black knot, similar to that which grows on the plum trees. It has killed nearly all the cheery trees in these parts. I would like to know what the cause of it is. Some persons think it is an insect, but on examination I find the suspected insect to be the grub of the curculio, which works into the wart, in the same way as into the plum. But this is not the real cause

of the diseased growth. From whatever cause it arises. I believe it is contagious, for if let alone it spreads very rapidly. I have kept it back for several years, by cutting off the diseased parts. But this spring it burst out on every limb and twig, and there was no other alternative but to cut the tree down. Any information respecting it or how to prevent it would be thankfully received.

R. B. WERDEN.

Picton, C. W., June 1862.

### Florists' Flowers.

The following is a recent report of the Floral Committee of the Hamilton Horticultural Society, which has been handed to us for publication:—

HAMILTON, April 15th, 1862.

*Mr. President and Gentlemen*—Your Floral Committee, in presenting this their first Report for the season, have much pleasure in remarking that they are hopeful, from the favourable winter that has passed, and the preparations that are now being made, that Flora will this year come forth shining in all her beauty and splendour. Your Committee cannot but express the gratification they have in perceiving a greater taste for the finer beauties of nature growing up amongst the people. Although now, as it were, but emerging from the embryo, it will spring up and grow until it embraces the whole land, refining and delighting all minds, beautifying and adorning our country and our homes.

The only flowers your Committee have been called upon to examine are a collection of seedling Cinerarias, raised by Mr. T. Buchanan, gardener to W. P. McLaren, Esq., Oak Bank, in this City. During the past month, and up to the 10th day of the present month, your Committee, at different times, visited Mr. McLaren's green houses, and carefully examined the plants when in flower, blooms of which have been laid before this Club at its meetings during the period alluded to. Those which your Committee have considered worthy have been named by Mr. Buchanan, and described by them as follows:—

*Mrs. MacLaren*, No. 13.—Light crimson, with white ring and purple disc, flower  $1\frac{1}{2}$  inch diameter, good habits.

*Distinction*, No. 14.—Purple self, flowers  $1\frac{1}{2}$  inch diameter.

*Marginata*, No. 18.—White, with dark magenta belt, purple disc, habit good, a beautiful flower.

*Helen*, No. 21.—White, with shaded crimson edging, and purple disc; a fine flower.

*Exquisite*, No. 24.—White, with narrow light crimson edging, purple disc; habits good.

*Standard Bearer*.—White, with maroon edging and plum disc.

*Neatness*, No. 31.—White, with narrow crim-



son edging, and lavender disc; size of flower one inch.

*Perfecta*, No. 32.—White, with crimson edging, lavender disc; habits good.

*W. P. MacLaren*, No. 33.—White centre, broad crimson belt, lilac disc; size of flower,  $1\frac{1}{4}$  inch.

The preceding nine named Cinerarias, are, in the opinion of your Committee, First-Class Flowers, and entitled to a First-Class Certificate, and we recommend the same to be awarded.

Your Committee heartily congratulate Mr. Buchanan in his good luck, and their desire is, that he and all others engaged in the same kind of work may go on and prosper.

GEO. LAING.

### The Pansey.

Read before the Hamilton Horticultural Club by Mr. J. W. Sinclair, Gardener, of that City:

*Mr. President and Gentlemen.*—In attempting to write an article upon the Pansey, I do so with the greatest diffidence, aware of my inability to do the subject that justice it requires, and which it would have received at the hands of one more conversant with its nature, and consequently more competent to give the information such a paper is expected to convey, for the guidance of the amateur and others in the proper and successful cultivation of this flower.

Among the long and still increasing list of florist's flowers, I know of no one more entitled to a prominent position in the flower garden than the Pansey. If we look at its colour, is it not truly excellent? Its form, is it not surpassing fair? While the imagination of the poet is alone capable of picturing its sweet unassuming modesty. It would be a useless waste of your time for me to attempt to trace the history of the Pansey from its obscurity to the prominent position it now enjoys in the favour of all who are interested in the truly ennobling pursuit of Floriculture. Suffice it to say that from having no pretensions to any of those qualities required in florist flowers, viz., size, form, and colour, it has assumed, and in a very marked degree claimed all those properties as its own.

It would be a very easy matter for me to give you the opinion of eminent growers on the best named sorts for competition, or to state their opinion and experience as to the proper mode of cultivation; but as any gentleman present can ascertain all this information for himself I will now give you my own opinion as to how I think the Pansey may be grown to advantage, if not to perfection in this country.

First, select a spot having either a north or eastern exposure, north is best, mark off your bed any size to suit fancy or convenience; I prefer three feet six inches wide by eight feet long: this done, remove the top soil to the depth

of one spade, and keep it close by for future use. Having removed all the loose soil from the bottom you will now proceed to the formation of a new bed; in the bottom place two inches broken stone, upon the top of that throw five inches of old cow manure, adding a portion of the soil already taken from the bed, and thoroughly incorporating the one with the other, (a three flat-toed fork is the best for this purpose.) Now apply a top-dressing of the following proportions, four-fifths leaf mould and one of sand—this done, and your bed neatly dressed, you may begin to plant; this I would do by placing the plants in three rows, at equal distances, slanting the Pansey on the outer rows, and, as far as practicable, a row of selfs in the centre. The plants must now receive a good watering round the roots, and be kept closely shaded for two or three days, when they may be exposed to the morning and evening sun, but not to that of mid-day, more especially when the plants are flowering, else it will either partially extract the colours or cause them to run, a consumption diligently to be avoided. If intended for competition care should be taken to have all suckers removed from the roots, and all flower buds nipt off with the exception of four or five; by so doing, the strength of the plants is not so heavily drawn upon, and much better flowers are obtained. For shading, I would recommend that four stakes be put down at the ends of the bed and a shade of factory cotton attached to a roller suspended between the top ones, with loops so attached that they could be hooked on to the other two. For the protection of the Pansey during our severe winter months, I would recommend a covering of brush or light litter.

To give a list of the best named varieties I think would be useless, as that can be best obtained from the nurserymen known as the most extensive and successful growers. I will merely name one which I think should be in every collection: *Eclipse*—a dark maroon, self-measuring three and one half inches through. A stand containing twenty-four such Pansies could not fail to be a centre of attraction in any exhibition—yet I have no doubt that by following the plan laid down in this paper we may ultimately attain to the same standard of perfection.

### June-Berry as a Pear Stock.

We have heretofore recommended, upon the practice of several eminent pomologists, the use of the June-berry or shad-bush, (*Amelachier Canadensis*), as a pear stock, and from farther evidence we are inclined to believe that it has been too much overlooked, both for this purpose and as an ornamental shrub of itself. It usually attains a height of from fifteen to twenty-feet, and is of graceful form. In the spring it is covered with snow-white flowers, and in autumn

the round purple berries, nearly as large as a mazzard cherry, giving it a beautiful appearance. The berry is sweet, not at all disagreeable to the taste, and we should judge could be easily improved so as to form a most useful fruit for many domestic uses. The berries, as indicated by the common name, are ripe in June, and much before other fruit is in a condition to be eaten.

Our attention has been called anew to this subject by the remarks of Charles B. Ott, a well known nurseryman of Pennsylvania, in the *Agriculturist*, who says he has used this shrub as a stock on which to graft the pear for eighteen years, and after this length of experience is well satisfied with it for most varieties of pears, while other sorts fail after ten or twelve years. The Seckel does very well on a stock of the June-berry, bearing fine fruit. Mr. Ott worked his trees four feet from the ground, but later experiments prove to him that it is best to work them close down, as low as on the quince stock. —*Maine Farmer.*

[We recollect seeing very fine pears growing on the June-berry stock, at a nursery, in the Township of Etobicoke, some thirty years ago. —*ED. AGRICULTURIST.*]

### The Profits of Fruit Growing.

In a report made to the Agricultural Society of Kentucky, we find some statements worthy of consideration.

Four or five years ago, a peach orchardist in Ohio was offered \$18,000 for the fruit on twenty acres of peach trees, while it was yet growing, and more than a month before the period at which the earliest part of it would ripen. He declined the proposition, and realized about \$20,000 from the same fruit by gathering and selling it to customers himself. This, however, was a most extraordinary instance of a good combination of circumstances, viz: fine fruit, a ready market, and high prices. It is one of those happy accidents which occur only once in a very long while. And, besides, four or five years of labor and care had preceded this crop, which was the first borne upon the trees.

Some vineyards near Cincinnati have in favorable seasons, produced nearly \$1,000 per acre; but a much more common yield, one year with another, is about \$250; a sum for about which good land in the Ohio Valley, easily accessible to the best markets, may be bought, trenched planted, (the price of slips included,) staked (with oak) and cultivated to its fourth year. The fourth year brings a crop—though not a full one. Let the avails of this go for interest and contingencies, and the account will then stand thus: Cost of a bearing vineyard per acre, \$250; value of crop, fifth year, \$250. Account balanced. (capital, interest and expenditures for labor being repaid,) and closed.

Within the succeeding five years, the equivalent of four crops may be counted upon. This is equal to \$1,000, which, divided by five, gives \$200 per year as the product per acre. This looks a great deal better than growing twenty bushels of wheat to the acre, or ten barrels of corn. In Washington Co., Ohio, snug little fortunes have been made in raising one kind of apple (the small Romanite, and shipping it southwest for the supply of New Orleans. Strawberry growers near Philadelphia have often pocketed \$500 to \$800 per acre for that delicious fruit. And a plantation of three acres of raspberries on the Hudson river, is stated to have yielded as high as \$1,500 in a single year.

### Domestic.

#### On making Soap.

*To the Editor of the Agriculturist.*

SIR,—I observe in your July 1st number a receipt for making hard soap which I consider of very doubtful utility, for I see no reason why the rosin should be put into the kettle until after the lye is formed, nor is the quantity of salt given, which is important, as too much salt defeats the object. From the following receipt as much or more soap can be made, than from the one you published, and with less material.

Take 6lb. of sal soda, 3lb. of good unslaked lime, put into a kettle, add 15 gallons of rain water, simmer over a slow fire two hours, let it settle, dip off the liquid, clean the sediment out of the kettle and put back the liquid; add 6lbs. of clean grease and boil slowly two hours; after it has boiled one hour add 2lbs. of melted resin and one coffee-cup full of salt, and you will have 30 to 40lbs. of soap. I have tried it, and if properly managed, soap can be made very cheap. If the liquid is simmered in the evening it can settle over night.

I have given the above receipt to at least half a dozen persons, and, with one exception, all have succeeded in making beautiful soap. Cost of material,—Sal Soda, 30 cents; lime, almost nothing; grease, the same; resin, 13 cents.

Yours, &c.,

A SUBSCRIBER.

Brampton, July 11, 1862.

#### Coffee Substitutes.

The love of coffee is an acquired taste. Perhaps nine-tenths of the people using it "burn" it almost to a coal, so that, in reality, any other burnt bitter would answer quite as well. In fact, multitudes in the far West, removed from markets, have become accustomed to use burnt bread-crust as a substitute, which



certainly is not injurious, but it is a known fact that a cup of some mild, hot drink at meals is a positive benefit, while a glass of the purest cold water is as certainly an injury, especially to invalids and to all who do not have robust health.

The following substitutes for coffee have been collected, in all of which it is suggested, first, that the substitute be mixed with the genuine articles, half-and-half; second, that in order to know what you are drinking, roast and grind your own coffee. In this way only can you know that you are not imposed upon, or may not be drinking some cheap material, either filthy or poisonous.

1. It is said that three parts of Rio, with two parts of old Government Java, well prepared, is quite as good, if not superior, to that made of the latter alone.

2. **WHEAT COFFEE.**—Wheat coffee, made of a mixture of eight quarts of wheat to one pound of real coffee, is said to afford a beverage quite as agreeable as the unadulterated Rio, besides being much more wholesome.

3. **RYE COFFEE.**—Take a peck of rye and cover it with water, let it steep or boil until the grain swells or commences to burst, then drain or dry it. Roast to a deep brown color and prepare as other coffee, allowing twice the time for boiling. Served with boiled milk. Wheat coffee probably could be made the same way.

4. **ANOTHER.**—Take some rye; first scald it; second, dry it; third, brown it, and then mix it with one-third coffee and two-thirds rye, and then you will have as good a cup of coffee as you ever drank.

5. **SWEET POTATO COFFEE.**—Take sweet potatoes, cut them fine enough to dry conveniently, and when dried, grind in a coffee mill; dry them by the fire or stove, at this season of the year, or by the sun when that will do it; grind and use one and a half tea-cupfuls for six persons, or mixed with coffee in such proportions as you like. Some omit half of the coffee, some more.

6. **BARLEY COFFEE.**—Take common barley, or the skinless, if it can be obtained, roast as you would coffee, and mix in such proportion as suits your taste. It is very good.

7. **PEA COFFEE.**—It is probably known to many that a very large percent. of the ground coffee sold at the stores is common field peas, roasted and ground with the coffee. There are hundreds of thousands of bushels of peas annually used for that purpose. Those that are in the habit of purchasing ground coffee can do better to buy their own peas, burn and grind them, and mix to suit themselves.

8. **CARROT COFFEE.**—It is recommended by an exchange. Cut up, dry and grind, and mix with coffee in quantities to suit the taste.

9. **CHESNUT COFFEE.**—Chesnuts, also, are said to make excellent coffee.

10. Dandelion root, dried and slightly scorched, never burned.

11. **CHICORY COFFEE.**—Equal weights of chicory and coffee, dried and roasted in the usual manner. The chicory is raised as easily as carrots, and in exactly the same manner. To prepare the root, wash it clean, slice it lengthwise in four to six pieces, according to size, cut in two-inch lengths, dry and keep in a dry place until wanted. Chicory is largely used to adulterate coffee in this country, and especially in Europe, twenty five millions of pounds being used in England and France alone.

12. **EXCELSIOR COFFEE.**—(our own.)—Half a cup of pure, new, farm house milk, and while boiling hot, add to it as much boiling water, and sweetened to suit, call it "coffee," and drink it down.—*Hall's Journal.*

## The Dairy.

### Milk and Butter from Ayrshire Cows.

H. H. Peters of Southborough, who has twenty-seven Ayrshire cows, weighed the milk yielded daily by several of them from the 15th to the 25th of June—ten days. The produce of six was as follows: Jean Armour, six years old, calved May 20th, an average weight of 54 lbs. per day; greatest quantity in one day, 58 lbs. Her milk was set separately for three days, and the cream from it produced upwards of six lbs. of butter of the finest quality. Corslet, five years old, calved June 3rd, an average of 38 lbs. per day. Duchess, five years old, 35 lbs. per day. Miss Miller, six years old, calved April 7th, 36 lbs. per day. Jane, six years old, calved May 27th, 36 lbs. per day. Queen, eight years old, calved February 1st, 34 lbs. per day. Nineteen cows, whose ages ranged from two to eight years, and whose period of calving extended from December to June, averaged 22 lbs. each. The milk from eighteen being set for one day, gave 20 lbs. of butter. Most of the milk is usually sold at the farm. None of the cows were milked more than twice a day, and all, with the exception of three, travelled a mile and a half to pasture and back again every day. Excepting the first-named, which had two quarts of corn and cob meal per day, none of them had anything in addition to pasture feed. Mr. Peters has lately sold two two-year old heifers and a cow, at \$150 to 200, each. They are the first females which he has allowed to leave the herd.—*Boston Cultivator.*

### Butter.

BY CUTHBERT W. JOHN<sup>SON</sup>, ESQ., F. R. S.

The examination of the milk of animals exhibits to us many marvels. We find here the benevolent arrangements of our Divine Author

on every side. It is true that to most of us these are unknown phenomena. Milk is merely regarded by many persons as a useful article in domestic economy: it improves our tea and coffee, it yields us butter and cheese; and that is the ordinary extent of our knowledge. Very few of us have leisure to reflect upon its uses to the young of animals. We often do not consider how that milk supplies the entire wants of the young—he growing calf; how the flesh and bones of the young bovine are all built up as it were by the materials found in its mother's milk, the carbon of the air it respires being also supplied from the same source.

Then again, the *composition* of that milk varies in a marvellous way with the wants of the calf. It is needful, for instance, that the dark-looking matters found in the intestines of the newly-born animal should be removed: to this end, the *first milk* of the cow is found to possess aperient properties. The young calf needs at its birth milk of a better quality than when it has acquired a certain degree of strength. Now let the reader compare in the following table the different degrees of richness of (I.) 100 parts of the milk of a cow in a pasture, examined by Dr. Playfair, with (II.) that of a cow, analyzed by Boussingault, before the calf had been allowed to suck, and mark the far greater richness of the *first milk* of the cow.

|                     | I.<br>Ordinary milk. | II.<br>First milk. |
|---------------------|----------------------|--------------------|
| Casein or cheese... | 4.0                  | 15.0               |
| Butter .....        | 4.6                  | 2.6                |
| Sugar of milk ....  | 3.8                  | 3.6                |
| Ashes .....         | 0.6                  | 6.3                |
| Water .....         | 87.0                 | 78.3               |
|                     | <hr/> 100            | <hr/> 100          |

It was Mr. Lyon Playfair, who some time since drew our attention to the composition of milk, its adaptation to the wants of the young animal, and the materials which it contains to supply every demand of the calf. As he told his hearers, in one of his eloquent lectures on the rearing and feeding of cattle, the casein of milk is precisely the same in composition as animal flesh, and hence supplies the matter adapted for the growth of the body. Its butter and sugar are destined for the support of respiration and the consequent maintenance of animal heat. Butter is indeed a substance admirably suited for the purpose, for it yields much heat by its union with oxygen. Sugar, also, is well adapted for the support of respiration. The ashes or mineral portion of milk consists chiefly of common salt, and the phosphate of lime, or earth of bones. In milk therefore, added Playfair, we find united all the conditions for the life of a young animal. Its rapid respiration, and the high temperature of its body, are supported by the butter and sugar of the milk. The casein

furnishes matter for its growth, and the ashes the materials for the formation of the bones, and the necessary constituents of the blood.

All such facts—and there are many other marvels to be met with, in our researches in the vegetable and animal worlds—cannot fail to stimulate our thirst for knowledge, and excite our gratitude to, and our reverence for their Divine Architect.

It is to only one of the chief constituents of milk—butter—that I propose to direct the reader's attention on this occasion. It is a branch of the economy of the farm, to which more and more attention is now paid. This is a natural result of the increasing demand for our dairy produce. After a considerable interval, the attention of the chemist has been again directed to this important subject. Two able lectures upon milk, and on the production of butter, have been delivered within a very recent period—the first, by Professor Voelcker, before the members of the Royal Agricultural Society; the second by Mr. James Dumbrell, of Ditchling in Sussex, at the April meeting of the Central Farmers' Club. It is some time since any public discussion of importance has occurred on dairy management; and it is a little curious that two lectures should at last have been delivered within a few days, on so increasingly important a theme. The operations of the dairy have not hitherto had the same justice done to them, as other branches of Agriculture. The incessant attention necessary in feeding the cows, in milking them, in the management of that milk and cream when it reaches the dairy, the ill effects upon the butter of only occasional neglect, are all sources of loss, that too often discourage the farmer from keeping a dairy. In fact, like most other pursuits, with care and persevering attention, dairying is a very profitable branch of Agriculture; but, it must be made a part of the never-neglected business of the farm, to ensure success. It was formerly essential that the situation of an extensive butter dairy should be near to populous places; now, however, the increased rapidity and cheapness of railway transit has brought almost all places into sufficiently ready communication.

One of the chief points in dairy management advocated by Mr. Dumbrell, is the tethering of the cows, and the frequent movement of the tethering stake, so as to allow the cow to quite consume the fresh grass without even slightly trampling on her food; for this purpose, the stake is moved in his pastures only about 18 inches at a time, and thus the cow always stands upon turf from which she has already cleared the herbage.

It must be remembered that the Jersey breed, of which Mr. Dumbrell's fine herd is composed, are a singularly docile race, and when he adopted in their case the tethering system, he merely followed a custom universally practised in the Channel Islands.



The management of these excellent lit'e cows in Jersey, was some time since described by Colonel Le Couteur of Belle Vue, in that island. There is no doubt that the soft air and sea breezes of Jersey add to the health of these cows, and to that opinion the Colonel inclines; for he observes, that it is a general opinion that cattle are generally more healthy and more free from epidemics there than in most countries. This may be attributable in some measure to the saline particles which, being so frequently in suspension over the island, are afterwards deposited on the herbage, and tend to its salubrity. After heavy gales, it is frequently found that the grass all across the island has a strong saline flavour. So partial are cattle to this flavour, that they will eagerly devour grass which has been watered with sea-water which they had previously rejected. Two pipes per acre, spread from an ordinary watering-cart, or from a pipe which may be made to pour into a long deal box perforated with holes, will be found of great utility where sea-water or salt can be obtained at a small cost.

"The Jersey farmer treats his cow with gentleness and care; it might be more correct to say that his wife does so. On good farms she is usually housed at night after the end of October to the end of February, if heavy rain, hail, or snow prevail. It is deemed to be healthful to give a cow a short run daily through the winter, excepting in stormy weather. At this season, which is usually several degrees warmer than in the mildest part of Devonshire, she is daily fed with a certain portion of straw, from 10lbs. to 20lbs. of hay, with about 10lbs. to 20lbs. of parsnips, white carrots, turnips, or mangel-wurzel. The grass which she may pick up in the winter, with the above quantity of food, enables her to produce a rich and well coloured sample of butter till within six weeks of parturition. At this period, which is usually regulated to take place about the month of March or April, just when the cow, being in full milk, may soon be placed on the fresh spring pasture in April or May, she is an object of extreme care. On calving she is given a warm potation of cider, with a little powdered ginger. Quayle hints that pet cows are further indulged with a toast in their caudle. The calf is taken from the cow at once and fed by hand. It may be well to advise that on the first occasion of calving, the calf should be allowed to draw the cow fully; for no milking by hand will so completely empty the udder, nor cause the milk-veins to swell to their full development, as will the suction of the calf.

Some of the early meadows produce rich grass in March; but the general flush of grass, which comes on generally late in April, is the period when the Jersey farmer looks forwards with anxiety. The cow is then tethered to the ground by means of a halter five or six feet long: this

is appended by a ring and swivel to a chain, which encircles her horns, closed by a ring and bar; the other end of the halter is fastened to a chain 6 or 8 feet long, which is connected by a swivel and ring to a stout iron stake a foot long; this is driven into the ground by a wooden mallet. The cow having this circular range of 12 feet or more, is compelled to eat it clean. She is usually moved twice a day, and milked morning and evening; on many farms at mid day also.

Under this system, the Colonel owned furcows that produced eight-and-forty pounds Jersey, or above 50lbs. imperial weight, of rich yellow butter per week to the month of May and part of June.

In hot weather, in July or August, it is deemed advisable to shelter cows from the heat and flies; otherwise these tease the cows to such a degree, by forcing them to run about incessantly, that they have no time for repose or for chewing their cud; they, in consequence, afford much less milk or cream.

It was anciently thought that cream from the Jersey cow was too rich for making cheese. M. Le Feuvre of La Hague, who has a fine breed of cows, tried the experiment some years since, and succeeded to admiration. It was made from the pure milk, cream and all, as it comes from the cow. It was found that the quantity of milk that would have produced a pound of butter afforded 1½ lbs. of cheese.

From the quantity of milk which produced a cheese of 20 lb. weight, the *drainings* of the curds and whey, on being churned, yielded 4lbs. of butter. This butter was of an inferior quality when eaten with bread, but was superior to any other for the making of pastry; it was peculiarly hard, and of excellent texture for such use in hot weather (*Jour. Roy. Ag. Soc.*, vol. v. p. 43).

In winter we have seen the Jersey farmers commonly feed their cows with a portion of parsnips, which is a favorite root in that island. In September or October, when the fine aftermath of their pastures begins to appear, from twelve to twenty pounds of these roots given to the cow at milking time produces a fine effect on the cream and fine yellow butter (*ibid.* vol. i. p. 421). In Jersey the parsnip is successfully cultivated on any deep land, whether stiff or light. It is a crop which from its easy cultivation, its freedom from disease and the attacks of insects, might be more extensively cultivated than at present, in many districts of our islands. Parsnips do not appear to be used by Mr. Dumbrell. His system of feeding has been given at length, in a previous page of this volume (see *ante* p.); and in that series of valuable observations he remarks, when decribng his mode of tethering:—"The grass should be eaten so close as to have the appearance of being mown. The cows must be led or have water

brought to them twice a day. The Jersey breed are so docile that a man can lead five or six at one time. By the time a dairy of say twenty or twenty-five cows have been staked over eight acres of meadow land, it will usually be found that the grass upon that part of the field where the first began will be sufficiently grown to be gone over again; indeed, the same ground may be pastured three times in one season, particularly on a farm where the liquid manure is utilized, and which can be used nowhere with so much advantage as following the cows when tethered. Eight or ten acres of fair meadow land will be found sufficient, in an average of years, for twenty-five cows, from the time they leave the stall until after haymaking. A great assistance to this system is the addition of some artificial green crops, as rye, trifolium, tares, &c.; for, during very hot weather, and when fly is troublesome, milk cows are much better under cover in their stalls than out of doors; they should then be tethered during the night and the cooler parts of the day. We suppose that our tethering carries us to quite the end of June or middle of July, and now is the time, just before the growth of the after-grass, when some care is required, and from which time some artificial provision is needed. Backward-sown tares is the best food to meet the difficulty; with this assistance the after-grass may be allowed to get a good head before it is begun. This brings us to the end of July, and the after-grass will carry us well through August, and this is the best month of the whole year for butter-making. Through the month of September mangold leaves will be found serviceable. For the end of September or beginning of October a little hay morning and night is indispensable; and as the weather becomes cold and wet, cows must be taken into stalls at night: lying out in wet weather is detrimental in every way to dairy stock; but no weather is so injurious to the produce of milk, besides being likely to cause abortion or shaking, as white frosts, and the greatest care should be taken that cows in calf should not feed out at that time. White turnips, with the remainder of the autumn grass, will carry us on to the end of November, after which time drum-head cabbage must be provided for at least two months. Cabbage is a very valuable winter feed, as it assists the colour of the butter, and is highly nutritious. Through February and March swedes may be used, and will be found to produce more butter than any other root. During all this winter season a liberal supply of good hay, not heated, is requisite. At the beginning of April mangold comes in, and if the weather is fine, some old grass reserved from the autumn, is very useful, with the addition of spring rape or late-sown white turnips; this, with rye, which must be used sparingly, brings us to our starting point.

To the food of the cow Professor Voelcker

also devoted a considerable portion of his excellent address. There is one error, with regard to cow's diet, which is too common not to render me desirous of briefly repeating, in his own words the result of the Professor's researches. It was when speaking of the effects of oil-cake that he observed (*see ante*, p. 362), that according to theory it would appear that food rich in oily or fatty matter would be extremely useful for producing rich milk, but in practice we do not always find it so. Very rich food has often a contrary effect: it produces by no means, always, a better milk nor a larger quantity; in short it produces fat and flesh instead of milk. Besides the tendency which cows that are good fatteners have to convert rich food into fat, there are some purely practical considerations to be taken into account before we consider the best quality of food which ought to be given to milking cows. It is well known that oily matters pass rapidly into milk. Cows supplied too abundantly with linseed cake produce milk which does not make good butter. A very curious case of this kind was brought under my notice some time ago by Mr. Barthropp. He had milk which furnished cream that could not be made into butter. When put into the churn it beat up into froth; the casein would not separate from the butter. I was informed by Mr. Barthropp that he had given his cows linseed cake in considerable quantities; and this cake, perhaps for want of being mixed with a sufficient quantity of good dry hay, had evidently had the effect of producing too much liquid fat. On trying to separate as much as possible the solid or crystallized fat from the liquid fat, I obtained one-third of solid fat to twenty-three parts liquid fat. In the churn the whole of it made up into a sort of froth. In fact, it could not be churned, the butter remained a liquid even at the cold period of the year at which the cream was analysed, namely, last January. I never before met with another equally striking case, as showing the influence of a great excess of oily food on the quality of cream, and consequently on the butter. In speaking of the quality of cream and more especially the fatty portion of it, I would take this opportunity of remarking that bad oilcake, and particularly bad linseed cake, does a great deal more harm than is generally supposed by dairymen. The inferior taste of the milk of stall-fed cows is well known; but I believe it is not so well known that the wholesomeness of milk is affected by the abominable matters which are occasionally put into linseed cake. Oilcake crushers at the present time seem to have the privilege of incorporating any kind of oily refuse, no matter what it may be, with linseed-cake; and since this has taken place, we have heard more frequently of diseased milk, and of milk which has a disagreeable flavour. Watery food, distillery wash, the acid water of starchmakers, and similar refuse make milk, as



is well known, watery ; and this dispenses with the necessity of mixing it afterwards with water. By far the most common adulterating material is watery food. Water is not so much added to milk as it is incorporated in the animal system before the milk is produced. It is well known that acid water, and especially water that contains lactic acid, has a tendency to produce an abundance of milk. When animals are fed with concentrated food, such as beanmeal or cake, it may perhaps be advisable—in the absence of brewers' grains or distillery refuse, two materials which contain lactic acid—to generate some lactic acid by keeping barley-meal for some time in contact with water, and by letting it slightly ferment, perhaps with some vegetable matter, which has a tendency to hasten the formation of lactic acid from barley-meal. By doing this, I am inclined to think, concentrated food like cotton-cake, or bean-meal, or rape-cake, would be rendered more digestible—more readily available for the production of milk of a good quality.

The owner of a dairy will do well to compare his practice with that of Mr. Dumbrell, and with the valuable chemical inquiries of Professor Voelcker. It is more than probable that the information he will obtain will well repay him for the time he employs in the study. The butter prepared in different districts of England we are all aware, widely differs in its quality ; and yet it is a very reasonable conclusion, that by a little more attention to the dairy and to the pasturage, and artificial food of the cows, the inferior butter produced in several counties may be very materially increased in value,"—*Farmer's Magazine (English.)*

## The Poultry Yard.

### The Best Way to Dispose of Bones.

MESSRS EDITORS :—After reading the various communications which have been published in the *Country Gentleman* on different methods of disposing of bones which accumulate about the premises of the farmer, and converting them into an available manure for agricultural purposes, I will inform your readers how I dispose of my stock of bones. All the bones which are obtained from the meats used in the family, are saved and carried to the hen-house, and deposited there to be used when wanted. Near the bones is placed a flat stone large enough to break them on. At the commencement of winter I begin to break them up, and dispose of them in the following manner:—Laying the bones on the stone, with an old axe, I pound them up fine enough for a hen to eat, and then let my hens eat them. In this way of disposing of bones it requires no sulphuric acid, potash or other costly drugs, which are somewhat danger-

ous for persons to use who are not acquainted with their nature. Neither does it require any fixture to prepare them in, nor time and labor to manufacture the bones into as good manure as any that is made on the farm.

At the present time I do not propose to discuss the comparative merits of the various preparations of bones that are used for manure, neither am I prepared to decide whether bone manure or hen manure is the most valuable for agricultural purposes ; but I am well satisfied as to the value of hen manure for any use that I have made of it. I believe it is an established axiom in agriculture, that the richer the food on which an animal is fed, the richer and more valuable will be the manure. As fresh bones contain much animal matter, as well as phosphates, the manure of hens fed with bones must be much more valuable than when kept in the ordinary way.

But the most profit which I obtain from bones used in this way, is the extra quantity of eggs which my hens produce when fed with the bones. I have found that it is necessary to give my hens a generous supply of animal food, as well as that containing phosphates, if I wanted them to lay well, and other things being equal, the supply of eggs has always been governed by the supply of these articles of food.

As my hens have the run of the farm when the ground is bare, they get a supply of animal and vegetable food, but in the winter season they must be furnished with these things from other sources. I think there is no one thing that furnishes a larger proportion of egg-producing food than fresh bones, as there is always more or less animal substance adhering to them. By making a little calculation with my bones and other animal offal, I give them this food several times a week during the season that they cannot get to the ground. Since I commenced feeding my hens in this way, the average weekly production of eggs has been full as large through the winter, as during any other part of the year. The price at which eggs sell for in this vicinity, is generally one-third more in the winter than in the summer, so that when the eggs are sold it makes a considerable difference to what it does not to have any eggs through the winter, as is the case with many who keep hens, and to sell what eggs are disposed of in warm weather, at the low prices which generally rule at such times. The past winter I kept fifteen hens. Early in the spring, a neighbor, on being told that my hens had laid nearly fifty dozen of eggs since December last, said, that his "hens had not laid an egg then, that he had not commenced feeding them yet to make them lay," their principal food previous to this being boiled potatoes and oats—thus showing conclusively in this instance, that hens must have the right kind of care and food to make the keeping of them pay well.—C. T. ALVORD, in *Country Gentleman*.

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Draught Stallions and their Selection.

Farmers have by this time made choice of the horses to which to put their breeding mares, and such selection has, we trust, been judicious and sensible. The recent reduction in the price of horses ought to direct more attention to the subject, and increase the production of those first-class animals which are always so saleable at remunerative prices. There is certainly no department of farm management in which the penny-wise and pound-foolish system is more frequently exhibited. Male animals with faulty pedigree, of shapeless appearance, and with obvious hereditary defects are too often used, simply because they are of convenient access, or the price charged is somewhat lower than for more perfect animals. It is too frequently forgotten that in breeding, whether horses or cattle, the first outlay for the use of the sire is but a small item as compared with the subsequent cost of rearing. The extra sovereign for the use of the superior horse is surely well bestowed when it adds in three years four or five pounds to the price of the progeny if he is a cart colt, and possibly double or quadruple the amount if he be a hack or a hunter.

First in importance in the recommendations of a stallion we would place his pedigree. In horses for the turf, and in the breeding of the best Arab steeds, the descent of both sire and dam receives primary attention, and should not be less important in the farm horse. By using animals which have been carefully and judiciously selected for several generations, we obtain good qualities that by repetition and transmission have become firmly impressed upon the stock, are less accidental and more permanent, and greatly more likely to re-appear in the progeny. Every breeder of superior short-horns or first-class sheep admits and acts upon this fact, but too often disregards it in the case of his draught horses. In many parts of the country inattention to the breeding of the cart stallion has led to much disappointment and loss. At present we know of several neat, compact, and tolerably good-looking stallions, once in good repute, which have left, from all sorts of mares, a multitude of undersized, shabby, valueless colts, which undoubtedly owe their deficiencies to the half-bred small parent stock from which the parents sprung. This disregard of good descent, operating with two-fold effect when involving both horse and mare is, we believe, the main cause of the notorious scarcity of first-class horses.

We must not be supposed to advise the farmer to place his trust in pedigree only. It can never be accepted in the room of good and useful

qualities which the well-bred cart-horse must in addition possess. Most of those so called 'points' are so familiar to the experienced eye of the practical farmer that they require little notice here. We would only insist at present upon two most important matters, of which the value is scarcely sufficiently appreciated, namely, a stout, short back, and good action. So intimately connected are the several parts of the animal machine that a disproportion in one respect seriously interferes with the general symmetry and harmony, and especially is this the case if the back be long. The ribs will then seldom arch as they should do, the chest is apt to be shallow, whilst the space between the last rib and the crest of the ilium will tell only too truly of weak digestive organs, and want of hardiness and endurance. If any horse proprietor looks over his stables he cannot fail to realize the fact that, whether in the saddle or harness, the cart or the plough, the well ribbed up, short-backed horse is the one for the hard work and the long day. Many farmers overlook or underrate the importance of action in the draught horse. They prefer the straight and upright shoulder to that which slopes and is well laid back. But good action is almost as requisite in the farm horse as in the hack or the hunter. If he can easily and gaily step out at the rate of three-and-a-half or four miles an hour, the walking which constitutes an important part of his daily labor is materially lightened. The importance of this is very notable in the case of coarse, heavy, under-bred horses, such as abound in some of the midland counties of England, and, indeed, are everywhere too numerous. They plod dully and clumsily along, generally finding it work enough lazily to drag an empty dung cart at the rate of about a mile an hour. It is also amongst horses of this unenviable description that we find the round, rough hairy, greasy limbs, the short pasterns which predispose to ring and side bones, and the flat, brittle feet which so seriously interfere with the usefulness of any animal intended for work upon the roads.—*N. B. Agriculturist.*

### Condiments.

The veterinary profession must feel an interest in the great agricultural questions of the day, and especially in all those that concern the management of stock. We devote upwards of sixteen pages of this number to the report of a meeting of the Royal Agricultural Society, at which cattle condiments were fully discussed. We have one great objection to the discussion, and that is, that Mr. Thorley has had the benefit of a gratis advertisement, for which he could well afford to pay several thousand pounds out of the extraordinary price he induces the British farmer to pay for his medicine. It is a great thing for a dealer in a specific to get a Mr. Beale Browne with his pile of letters, and Ma-



for Munn with his conclusive facts. These gentlemen have done for Mr. Thorley what hundreds and thousands have hitherto done before them for infallible pills and ointments which purify "the tree of life." The recent meeting in Hanover-square affords a striking contrast to the intelligent manner in which such subjects are taken up on the continent. The subjects there are tested by scientific commissions. The Danish government, we believe, was the first to take up the subject of cattle condiments in a systematic manner, and judiciously-conducted experiments led to conclusions similar to those already published by our illustrious countryman, John Bennet Lawes.

How well Mr. Thorley has succeeded is proved by the manner he has raised himself to the position of a martyr in the eyes of Mr. Beale Browne, and similar judges of fact and character. There are two ways to make money in Great Britain out of medicines and other extraordinary preparations. The one is to give an invaluable article, which soon proves an essential commodity, at a small price. The other is to select an article which will not injure, advertise it to any extent, and charge the public for its extraordinary faith in puffs. Many in this world were never born to think much for themselves, and the advertiser has learned that for this class it is essential to assert loudly enough in order to make it believe anything and buy Mr. Thorley will continue to advertise, many will buy and extol his preparations, but the enlightened and provident farmer will think more than twice before he pays for the pretty pictures at the railway stations, and for which the nice manner in which, as the advocates for the food at the recent meeting said, Mr. Thorley's announcements were displayed.

But we have another view to take of the matter, and this not as the result of a prejudice, but from observation. We were once told that the condimental food was concentrated—that was a wrong statement, and we are now asked to look upon it as Worcestershire sauce to the beef-steak. So far as simple condiments are concerned in their effects on man, physicians are at one in urging their very sparing employment. They are useless to those, who, being healthy, are also moderate in their tastes, and are neither intemperate feeders nor drinkers. When a man eats for eating sake, he forces his digestive organs into unnatural work by cayenne and mustard, which he cannot afterwards dispense with without suffering from dyspepsia.

Salt is the material most universally and necessarily employed to render foods palatable, and to aid their nutritious properties. But in excess salt is also very injurious; and Professor Anderson's recent lecture should not be lightly passed over by the man of science and the man of practice. Professor Anderson's statement and recent experiments on pigs by Mr. Lawes, will receive that confirmation by after-experi-

ence which will tend to keep the condiments in their right place, as good property for advertisers, though bad investments for the stock-owner.

To turn more particularly to the somewhat new view we take of this matter, we must mention that condiments, even in the simple form of common salt, but especially aromatic substances, may often kill. The diseases of cattle in Great Britain are undergoing great changes—Deaths from the results of plethora are now far in excess of deaths from other causes. It is not the poor condition, but the extravagantly high condition, of our stock that we must correct. Splenic apoplexy, liver diseases, and other affections due to feeding, and to food grown on rich soil under a forced system of cultivation, are largely on the increase; and if farmers think the medicine, which the Royal Agricultural Society has now helped to advertise, will have as good an effect in these cases as on Major's Munn's six-shilling sheep and his old horse they will be repaid for their credulity by a high mortality. We have frequently been in a position to confirm the observation made by the late Professor Delafond, that condiment, though no more than a small quantity of common salt, is sufficient to turn to death's side the hesitating balance between health and disease in the plethoric animal.

The motto of the English society is, practice with science; and, in accordance with that, let us not have medicine vendors, whose nostrums are wonderful in the mystery which veils their nature and action, puffed to the detriment of agriculture. No British farmer should pay but for that which he thoroughly understands the composition and properties of. Manures are being rigorously tested; they are being sold with analyses, and adulterations are being rendered more and more difficult. Any veterinary surgeon may, for a guinea fee, furnish Mr. Beale Brown, or any other advocates of condiments, with a prescription which will save him hundreds and even thousands, which he might expend in advertised materials, if he wishes *medicine to improve health* (?) Let the drugs be bought in the cheapest market, with open eyes, and mixed by the most careful of old women, and our extensive advertisers must shut up shop. We wish them that share of the good things of this life which they deserve; but we do protest in the interest of the British farmer, and in defence of British common sense in the sight of the world, against the twaddle-talking in the Royal Agricultural Society's rooms in Hanover-square.

—*Edinburgh Veterinary Review.*

Analysis of linseed according to Dr. Voelcker:

|                               |       |
|-------------------------------|-------|
| Water.....                    | 7 50  |
| Oil.....                      | 34 00 |
| Flesh-forming matter.....     | 24 44 |
| Heat-giving constituents..... | 30 73 |
| Inorganic matters (ash).....  | 3 33  |

## Miscellaneous.

### Paraffin, or Coal Oils

Paraffin—or, as this fluid is frequently termed, coal oil—has been, for some years past, largely used as an illuminating agent. The cleanliness and the economy of the paraffin lamps, with the brilliancy of the light produced, has led to their very general adoption, especially in those places where the conveniences of gas have not as yet been made available. Paraffin, and, indeed, all the varieties of the oils which are sold under this name, are, like it, compounds of carbon and hydrogen. They are produced by the distillation, at carefully regulated temperatures, of coal, of certain carbonaceous shales, and the different varieties of petroleum which are now so largely obtained in America and in Asia. As we have said, from whatever source derived, these oils are hydrocarbons, and, according to the temperature at which the distillation is effected, there result heavy or light oils, as they are termed by the manufacturers. These oils are of variable specific gravities, and their boiling points range all the way from 46 degrees to 600 degrees Fahr. Hence it is that explosions have arisen from the improper admixture of the lighter oils with the heavier ones. In some cases this has arisen from insufficient purification of the oil for burning, and in others (which include by far the larger number of cases) by the mixture of volatile oils obtained from other sources with the less inflammable oils distilled from coal. In the early stages of this manufacture, Cannel coal was almost exclusively used as the oil-yielding material; but since the discovery of the oil wells of Pennsylvania and other places, petroleum has, in a great measure, supplanted the use of coal, some establishments using the natural oil alone. The object of this is readily appreciated. The petroleum being naturally in a liquid state, there is no necessity for a preliminary distillation, as in the case when coal is used, in which event the crude oil must be first produced by exposing the coal to distillation at a low heat, and the resulting product be treated in the same manner as the oil already formed in the wells. By the use of petroleum the retorts for the first distillation are dispensed with, and thus a saving is effected in apparatus as well as in time and labour. When petroleum alone is used in the manufacture of kerosene oil the product contains a much larger proportion of volatile hydrocarbons than when coal is wholly or partially employed, and, therefore, more precautions are necessary, and greater labour is requisite, to effectually get rid of these dangerous substances. Some manufacturers not only neglect to remove these volatile compounds from the oils, but actually purchase the light oils from more conscientious refiners, in order to mix them with heavy oils to make them burn. This is

an exceedingly reprehensible practice, and deserving severe punishment; for the heat generated by the heavy oils in burning vaporises the volatile portion, and renders it liable at any time to explode. The oils distilled wholly from coal, or those with which but a small portion of petroleum has been mingled, are much more easily freed from dangerous portions. By a careful refining, and after distillation, steaming, and a large surface of atmospheric exposure, every dangerous compound can be removed, and no fear need be apprehended from oils which are known to be subjected to a rigid and conscientious refining. In purchasing oils, however, nothing should be taken for granted. They should be carefully tested, and their liability to explode fully investigated. The simplest and most satisfactory test of safety is to place the oil in an open dish in a water bath, and heat it up to 130 deg. to 140 deg. Fahr. If, when elevated to this temperature, and applying a match, it does not ignite, it may be pronounced very safe. If it ignites but slowly or sluggishly it is safe. But any oil that lights quickly in an open dish, at a temperature below the 130 deg. Fahr., may be considered as dangerous. We have seen oil the vapour of which ignited with a smart puff or explosion at 60 deg. Fahr., on holding a lighted match more than one inch above its surface. This was dangerous in the highest degree, and the vendor of such a compound should be held to strict accountability for any accident occurring from its being burnt in lamps. The extensive use of these oil-lamps among the working classes induces us to call special attention to this very simple test. To those who may not be provided with a thermometer to measure the temperature, the following simple rule may be adopted;—Pour into a basin a pint of boiling water, and allow it to stand to cool for five minutes, then pour some of the paraffin oil into a teaspoon, and having floated the bulb of the spoon on the hot water, leave it at rest for a few minutes; then hold a lighted match a little above the spirit; if it ignites quickly, it is dangerous; if not at all, or very slowly, the paraffin may be used without fear of accident. A metallic fountain or reservoir should always be avoided in using any of those hydrocarbon oils. To show the vast difference of the oils now on sale as paraffin oils in this country, Dr. R. Angus Smith, F. R. S., of Manchester, an eminent chemist, has lately found that oil made by Mr. Young, the inventor, and his partners, from coal, and who have really the only right to call their oil paraffin, will not ignite in an open vessel at 154 deg. Fahr.; while a sample of American rock oil, sold as paraffin, exploded at a temperature of 46 deg. Fahr.—*Mining Journal*.

Nine-twentieths of the flesh-forming matters are stated to be found again in the manure of animals fed upon oil-cake.



**ROOT CUTTER AND CLEANER**—A writer in the *Country Gentleman* says :—When potatoes are fed whole, or other roots are cut coarsely, the animal is obliged to hold its head so high to keep the root in contact with its teeth, that gravitation alone will pass it to the gullet, and ordinary it will pass thence unchewed, if not too large but if cut properly and mixed with cut stalks; straw or hay, as they always should be, they will be eaten with the head down, as in eating grass, and consequently be more thoroughly masticated and mixed with other food, and all danger from choking is wholly avoided. Hence the preventive that I have used for five years, and recommended to others to use, is, to cut up the vegetables as finely as possible with a good root cutter and cleaner.

### Pictures from Memory.

The mind of every man has its picture gallery—scenes of beauty or magnificence, or of quiet comfort, stamped indelibly upon his memory. More than half the exile's recollections of home are a series of landscapes. The poor untaught Highlander carries with him to Canada pictures enough in the style of M'Cullough to store an exhibition room—pictures of brown solitary moors, with here and there a grey cairn, and here and there a sepulchral stone—pictures, too, of narrow secluded glens, each with its own mossy stream that sparkles to the light like amber, and its shaggy double strip of hazel and birch—of hills, too, that close around the valleys, and vary their tints, as they retire, from brown to purple, and from purple to blue. He carries them all with him to the distant country. The gloomy forest rises thick as a hedge on every side of his wooden hut; the huge stumps stand up abrupt and black from amid his corn, in the little angular patch which his labor has laid open to the air and the sunshine. These are the objects which strike the sense; but the others fill the mind; and when year after year has gone by, and he sits among his children's children a worn-out old man, full of narratives about the brown moors and the running streams of his own Scotland, his eyes moisten as the scenes rise up before him in more than their original freshness; and he tells the little folks as they press around him, that there is no place in the world that can be at all compared with the Highlands, and that no plant equals the heather. One of Wordsworth's earliest lyrics—a sweet little poem which he gave to the world at a time when the world thought very little of it, though it has become wiser since—embodies a similar thought. The poet represents a poor girl—originally from a rural district, who had been both happier and better ere she had come to form a unit in the million of London—passing in the morning along Cheapside, when a bird, caged against the sun-

ny wall, breaks out in a sudden burst of song. Her old recollections are awakened at the sound; the street disappears and the dingy houses; she sees the meadow tract, with the overhanging trees, where she used to milk her cattle; she sees, too, the cattle themselves waiting her coming; and, in the words of the lyric, "a river flows down through the breadth of Cheapside." Poor Susan! her heart is stirred, and her eyes fill.

Every human mind has its pictures. Were it otherwise, who would care anything for the art of the painter? When standing in front of M'Cullough's exquisite Landscape, I was enabled to call up some of my own—moonlight scenes of quiet and soothing beauty, or of wild and lonely grandeur. I stood on a solitary seashore. A wall of cliffs, more than a hundred yards in height, broken, rose abruptly behind—here advancing in huge craggy towers, tapestried with ivy and crowned with wood—there receding into deep gloomy hollows. The sea, calm and dark, stretched away league after league in front of the far horizon. The moon had just risen, and threw its long fiery gleam of red light across the waters to the shore. A solitary vessel lay far away, becalmed in its wake. I could see the sail flapping idly against the mast, as she slowly rose and sank to the swell. The light gradually strengthened; the dark bars of cloud, that had shown like the grate of a dark dungeon, wore slowly away; the white sea-birds, perched on the shelves, became visible along the cliffs; the advancing crags stood out from the darkness; the recesses within seemed, from the force of contrast, to deepen their shades; the isolated spire-like crags that rise thick along the coast, half on the shore, half in the sea, flung each its line of darkness inwards along the beach. A wide cavern yawned behind me, rugged with spiracles of stalactites, that hung bristling from the roof-like icicles at the edge of a waterfall; and a long rule of light that penetrated to the innermost wall, leaving the sides enveloped in thick obscurity, fell full on what seemed an ancient tomb and a reclining figure in white—sports of nature in this lonely cave. There was an awful grandeur in the scene; the deep solitude, the calm still night, the huge cliffs, the vast sea, the sublime heavens, the slowly rising moon, with its broad cold face! I felt a half-superstitious feeling creep over me, mingled with a too oppressive sense of the weakness and littleness of man. Pride is not one of the vices of solitude. It grows upon us among our fellows; but alone, and at midnight, amid the sublime of nature, we must feel, if we feel at all, that we ourselves are little, and that God only is great.

The scene passed, and there straightway arose another. I stood high in an open space on a thickly-wooded terrace, that stretched into an undulating plain, bounded with hills. The

moon at full looked down from the middle heavens, undimmed by a single cloud; but far to the west there was a gathering wreath of vapor, and a lunar rainbow stretched its arch in pale beauty across a secluded Highland valley. A wide river rolled at the foot of the wooded terrace; but a low silvery fog had risen over it, bounded on both sides by the line of water and bank; and I could see it stretching its huge snake-like length adown the hollow, winding with the stream, and diminishing in the distance. The frosts of autumn had dyed the foliage of the wood; the trees rose around me in their winding-sheets of brown, and crimson, and yellow, or stretched, in more exposed openings, their naked arms to the sky. There was a dark moor beyond the fog-covered river, that seemed to absorb the light; but directly under the nearest hill, which rose like a pyramid, there was a tall solitary ruin standing out from the darkness, like the sheeted spectre of a giant. The distant glens glimmered indistinct to the eye; but the first snows of the season had tipped the upper eminences with white, and they stood out in bold prominent relief, nearer, apparently, than even the middle ground of the landscape. The whole was exquisitely beautiful—a scene to be once seen and ever remembered.—*Essays by Hugh Miller.*

**PLANTED BY NATURE.**—Some seeds when ripe are provided with hooks made to catch hold of passing animals, which after a time, get rid of them by rolling on the ground. Those seeds which are surrounded by a succulent pulp, and are swallowed by birds and quadrupeds, are generally favourably consigned to the earth. Most seeds pass uninjured through the stomach and intestines of all animals, with the exception of gallinaceous fowls. Currant seeds, after having been eaten by man, can germinate. Foxes sow seeds of the cranberry (*vaccinium*) after eating its red berries. Apple and pear trees are often found in ditches and under hedges; proceeding, it is said, from fruit which has been devoured by peasants. Farmers are often astonished when, after having, as they think, perfectly prepared their fields, and sown excellent corn, on reaping they find some places covered only with useless oats. In other cases, mammals and birds devour only a portion of seeds while the rest fall and become productive. When the squirrel shakes the cone of the pine tree to obtain the seeds, a great number fall to the ground and are lost to him. The inhabitants of Iceland call a particular sort of nut "rat's nut," from the circumstance that the rats gather them in great numbers, and hide them in the ground. But as the rats are very often killed by one or other of their enemies, the nuts are often left to germinate. Seeds falling into worm-holes are sure to germinate, as well as seeds which drop into subterranean

passages made by the moles to ensnare worms and insects. The hog by tearing up the earth as with a ploughshare, prepares it for the reception of seeds. The hedgehog passes his life in doing the same service.—*Dickens's All the Year Round.*

**FOREST TREES.**—From the manner in which the Germans preserve and improve their forests, our countrymen might take a valuable lesson. At Hohenheim, this forms one of the most important departments of study. The pupils are instructed in the best method of preserving, propagating, and improving their forest trees, while at the same time a proper estimation of the pecuniary and moral value of those productions of nature is instilled into their minds, which must eventually become the common sentiment. Our people must give attention to this subject sooner or later; and every day's neglect of this practical science will entail evils upon us for which years of labor can hardly make amends. We do not as people appreciate the value of our forest. Negligently, carelessly and wantonly, we are destroying them on every side, not considering that in them lies a mine of untold wealth; for the time comes with every people when they can turn their own natural productions to the most advantageous use for themselves; and this law applies as firmly to the trees as to the coals and various mineral ores. The connection and family health, enjoyment and comfort, with a grove of primeval forest trees about the homestead, never entered the practical heads of our fathers; and their sons, true to the example before them, pursued the same suicidal course. Down came the lofty oak and the beautiful maple, leaving the homestead to parch, and the spring to dry up in the scorching rays of the sun.

If there are any exceptions here and there, you will find the value of the farm increased a thousand fold, simply because the trees have let alone; and what if they have been cultivated with proper care? All along the line of the railroad in Southern Germany, I saw acres and acres of forests trees, from ten to fifteen and perhaps twenty years old, planted in rows as regular as corn is with us, and all cultivated in the most scientific manner.

When will our people learn wisdom in this matter. Will they heed the warning of the Old World—listen to the admonitions and counsels of science, and be prudent in good time? Or will they wait to learn it too late from their own experience?—*Feild Notes*

In a soil unmanured the produce was three-fold, the nitrogenous substances being 9.6 and the non-nitrogenous substances 66.7 in 100 parts. In the same soil manured with potato haulms, the produce was five-fold, the nitrogen being 9.6 and the non-nitrogenous 6.5 94 per cent.



**HISTORY OF THE NORMAN HORSE.**—This horse, known as the Crawford horse, was brought from Lower Canada, about 60 miles below Quebec, in March, 1850, when he was three coming four years old, by T. H. Hussey and Alexander Crawford, of Skowhegan, in this State. Mr. C. has kept him ever since. He is therefore fifteen years old this spring. He is of a light chestnut color, and weighs from twelve to thirteen hundred pounds. He has not been trained for trotting, and yet he has gone at our cattle shows in about three minutes. He was sired by the famous horse Trudell, and out of a Norman mare. He has always done a fair business until within a year or two, in which time it has very much increased. His colts are generally well known all over the county, and are all good size, weighing from ten to thirteen hundred pounds, and they are generally smart travelers, and good roadsters. Norman has got more trotting colts than all other horses that have been kept in Somerset county since he has been in the county. His colts have sold for more money than the stock of any other horse kept in the county. In 1859 at the State Show in Augusta, four of his colts took premiums. Brookside, owned by Geo. Gilman, one of his colts, made 242. At the Show of the Central Agricultural Society, of Somerset, the same year, there were eleven horses entered for trotting and eight were young Normans. The famous Harvil colt, a Norman, was matched against the Crockett horse of Bangor, in which the Harvil colt led in three straight heats. Harvil colt was five years old and weighed eleven hundred and seventy pounds and a gelding. He has since been sold in New York for \$2,000. I think Norman took all the purses where they were matched at this Show. At the Farmington Show the same year, two young Normans took the two first purses—Benj. Baker colt, the other by Samuel Jacobs, called White Stockings. Last fall, at Anson, three purses were offered and one bet made, in which three Normans were entered and took two purses and the bet. Last fall, at Skowhegan Show, one four years old mare trotted in three minutes and three seconds, without making a skip. She was owned by Mr. Walker, and raised by H. K. Knight of Cornville.—*Maine Farmer.*

One hundred pounds of red beet contain of real food 10 lbs., of water 89, and ash 1.

One hundred pounds of oats contain of husk 23.7, of starch gum 46.1 of gluten, albumen, &c. 13.7 of fatty matter 6.7.

One hundred pounds of barley straw contain 1.70 of dry nutriment, and 49.81 of heat and fat producers.

### A Thorough Bred 2 Year Old AYRSHIRE BULL

FOR SALE, by Mr. Denison, Dover Court  
Toronto.  
April, 1862.

### THOROUGH BRED STOCK FOR SALE.

**THE SUBSCRIBER** has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

### FOR SALE.

**A LOT** of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,

Dover Court.

Toronto, Ang., 1861.

### Notice of Partnership.

**THE** Undersigned have entered into Partnership as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,

GEORGE W. BUCKLAND.

### NOTICE.

**JAMES FLEMING & CO.**, Seedsmen to the Agricultural Association of Upper Canada will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

**JAMES FLEMING** will continue the business of Retail Seedsmen and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

### Seeds! Seeds!! Seeds!!!

**JOHN GEORGE WAITE**

181 High Holborn, London, England.

**HAS THE LARGEST STOCK** of VEGETABLE, AGRICULTURAL, and FLOWER SEEDS, IN THE WORLD, and can supply dealers on better terms than any other whose sale house, as he makes most extensive arrangements with none but experienced growers do produce his supply of seeds, which are raised and grown from stock selected under his own personal superintendence, and as they are all cleaned and picked in his own extensive warehouses by an auxiliary strength of several hundred men and women, kept for that purpose, he is enabled to recommend, with the greatest confidence, every description of Seed offered by him for sale, and he therefore invites Seed Dealers to apply for his Catalogue.

TERMS—Cash, or satisfactory reference  
England.

March, 1862

6t.

## VETERINARY SURGEON.

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

## IMPROVED BERKSHIRE PIGS

**F**OR SALE by Mr. Denison, Dover Court, Toronto.

Toronto, April, 1862.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

Subscription—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

Editors—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

## Contents of this Number.

|                                                      | PAGE. |
|------------------------------------------------------|-------|
| The new Wheat Insect.....                            | 417   |
| The International Exhibition.....                    | 418   |
| The Season in Huron.....                             | 420   |
| Town'p of Hamilton, Agricultural Report              | 421   |
| Canadian Timber at the International Exhibition..... | 424   |
| Irrigation for Grass Lands.....                      | 426   |
| Economy in Preservation of Manure....                | 427   |
| Hydropathy in the Garden.....                        | 428   |
| Short Horns in France.....                           | 429   |
| Surface Manuring.....                                | 430   |
| Natural Food vs. Medicine.....                       | 431   |

## AGRICULTURAL INTELLIGENCE:

|                                           |     |
|-------------------------------------------|-----|
| Agricultural Shows this Autumn.....       | 432 |
| Importation of Cattle.....                | 432 |
| Adulteration of Manures in France.....    | 433 |
| Agricultural College Bill, United States. | 433 |
| Wool Exhibition in Ohio.....              | 434 |

## HORTICULTURAL:

|                                   |     |
|-----------------------------------|-----|
| Black Wart in Cherry Trees.....   | 434 |
| Florist's Flowers.....            | 434 |
| The Pansey.....                   | 435 |
| June Berry as a Pear Stock.....   | 435 |
| The Profits of Fruit Growing..... | 436 |

## DOMESTIC:

|                         |     |
|-------------------------|-----|
| On Making Soap.....     | 436 |
| Coffee Substitutes..... | 436 |

## THE DAIRY:

|                                        |     |
|----------------------------------------|-----|
| Milk and Butter from Ayrshire Cows.... | 437 |
| Butter, by Cuthbert Johnson.....       | 437 |

## THE POULTRY YARD:

|                              |     |
|------------------------------|-----|
| How to Dispose of Bones..... | 441 |
|------------------------------|-----|

## VETERINARY DEPARTMENT:

|                                           |     |
|-------------------------------------------|-----|
| Draught Stallions and their Selection.... | 442 |
| Condiments.....                           | 442 |

## MISCELLANEOUS:

|                                  |     |
|----------------------------------|-----|
| Paraffin, or Coal Oil.....       | 444 |
| Pictures from Memory.....        | 445 |
| Planted by Nature.....           | 446 |
| Forest Trees.....                | 446 |
| History of the Norman Horse..... | 447 |

|                            |     |
|----------------------------|-----|
| EDITORIAL NOTICES, &c..... | 447 |
|----------------------------|-----|

## FOR SALE.

**A** LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibitions.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE

# Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, AUGUST 1, 1862.

No. 15.

## The International Exhibition.

LONDON, ENGLAND, July 3, 1862.

### *Editors of the Canadian Agriculturist :*

Within the last few days I have made a visit to the implements in motion at Battersea, and am now able to assure you that they were a sight well worth seeing. The many machines in the yard of every description driven by steam were surprising and instructive in the highest degree. In a previous letter I gave you some account of the improved threshing machines. I have now seen them at work, and am quite convinced of their excellence. One in particular does its work effectively, threshing, cleaning, bagging, and weighing the grain, and elevating the straw to a height of some 16 or 20 feet in a most expeditious manner. I really hope that some of our ingenious Canadian Mechanics may be here to witness the operation of many of these machines and introduce amongst us the improvements that have been made in most of them. There is a brick making machine capable of making 20,000 of the most excellent bricks in a day, grinding and pressing all at one operation. The tile making machines are also very efficient. A grinding mill with three run of stones is one of the most simple and at the same time one of the most effective mills that can be imagined. Chaff cutters are brought to the highest state of efficiency, and are doing their work at a rate that is far in advance of previous performances in this line.

The many very useful machines at work, illustrate the power of steam in the most complete manner. It is quite impossible for me to describe the many important and excellent inventions, but I shall forward all the catalogues as well as newspaper reports, which contain a great amount of information of a nature to interest your readers.

I went on Saturday to Farningham, a distance of about 20 miles, to see the last days' trial of implements worked by steam, and was much pleased with the manner in which the work was done. There were some five or six makers who had their machines at work. They consisted of ploughs, scarifiers, and a digger. The mode of working has been much simplified by Mr. Fowler, and his machine is admitted to be the best now in use, and in my opinion is very complete. It was his plough and machinery that I described to you at work last week, and I am quite convinced that I did not over-rate its capabilities.

The cultivator is a very capital implement; it works on the balance principle, the same as the plough, has 14 prongs, 7 on each end of the frame. These prongs penetrate the hard clay to a depth of seven or eight inches, are moved at the rate of four miles an hour, and will do an acre in an hour or even less time.

The digger is a new implement; it is the same in structure as the plough, only the mould board is of a different form. The object is to throw the ground up in a rough state, to be acted on by the frost and sun. This was exhibited this year for the first time, and was by many much approved of. One great advantage of Mr. Fowler's over Mr. Howard's mode of working these implements, is that much less rope is required, Fowler's, being simply passed round a large wheel or pulley, both at the engine and anchor, while Howard's rope is at the engine, wound up on a drum. I should state that the rope is made of steel wire and weighs  $2\frac{1}{2}$  lbs to the fathom. The field in which they were working was nearly a quarter of a mile in breadth, there was therefore half a mile of rope necessary in the case of Mr. Fowler's machine, and Mr. Howard's requires double the length. A full report will be out in a day or two which I will send you. I am now only giving my own impressions from the

observations I made, and from conversation with persons of experience. The official report may or may not confirm my opinions.

You will see in the English newspapers the names of other parties who had implements, and competed. The competition at this trial was entirely for the purpose of proving the merits of the machines and implements, as there were no prizes to be awarded. The contest was for the public favor alone. A traction locomotive was on the ground, moving with several cars attached to it, on the common road, from one part to another of the trial ground, and carrying numbers of the spectators. It seemed to be under the most complete control of the driver, and moved in any direction he willed with the nicest precision, turning corners and stopping and starting with more tractability than the best trained horses could have been made to show. The same machines are to be seen at the Battersea Show, careering around a circle of perhaps 60 feet diameter, crossing and passing each other as if they were going through the figure of a lively dance. It is now an established fact that these engines can be used on the common roads of this country, and their use has been legalized. From their great breadth of wheel they rather benefit than injure the roads, and cannot be objected to on that account.

The street railway has had its day here, and is at an end. The last, which extended from Kensington gate to the Westminster Bridge, has been taken up within the last few days. The agent was fined five hundred pounds for persisting in keeping it in operation after he was required by a decree of court to discontinue it. He claimed the sympathy of the public on the ground that it was the peoples' cheap mode of travel. Public meetings were called and handbills posted up with a view of procuring a reverse of the decree, but all in vain. There had been an infringement of the law, and punishment of the parties attempting to set it at defiance must follow. The annoyance to carriages, and the obstruction of the thoroughfare, was the ground of the complaint, which caused the removal of the roads. Large three horse omnibuses have at once taken the place of the street cars, and therefore the public are still accommodated with the means of travelling on the same route, which is a very important one.

The attractions here now are increased to day by the commencement of the great Rifle Match at Wilberdon Common. I hope to attend this one or two days. Between the Rifle match, the Agricultural Show, the Great Exhibition building, the Crystal Palace at Sydenham, and the somewhat novel entertainment of a Dog Show, also going on, there is scope enough for the exercise of the attention of the sight-seers, of whom the numbers congregated here are not small.

The journals of the day contain articles on the marriage of the Princess Alice, just solemnized,

which are worthy of attention from their tone of heartfelt affection and regard towards the youthful Princess. I believe these articles are the true expression of the national feeling, and surely the people are blessed who can with reason entertain such feelings towards the members of the reigning family. That the prayers of millions of pious hearts in this glorious land have ascended to heaven in the most sincere and earnest manner for the happiness of the youthful pair, I do not in the least doubt.

You will perceive that on the 11th instant the crown labours of the jurors will take place. I shall have to remain here until after that date, and will probably attend the review of the Volunteer Riflemen which is to take place on the 12th, after which I shall immediately take my departure from this great city, and visit some few places in the North of England and Scotland, and thence proceed to Liverpool to embark by the steamer that is to leave on the 24th inst. My stay has been prolonged a week in consequence of the two public events above mentioned.

July 10th.

The Battersea Show is now over. I send you some numbers of the *North British Agriculturist* which contain very correct information on the several departments in addition to what I last week sent you. I was disappointed at not seeing more horses exhibited, but the reason given by the Editor of the *North British* may perhaps account to some extent for the deficiency. The season for which the services of the best stallions are required not having terminated prevented their coming to the exhibition. No matched pairs, gig, or saddle horses were shown, which made the show of horses, taken altogether, much below what I, at least, expected to see.

The principal objects of attraction this week are the International Exhibition and the Rifle match. The latter being at some distance and the weather very rainy, does not draw very many spectators; besides, persons soon tire of looking at the firing at long ranges, where none but the markers have access to the targets. I went one day, but as it was wet and uncomfortable I did not stay long. The targets, to the number of about 30, are all arranged on one side of the common, and the spectators on the other, so that it is rather a dull business for those who are not immediately engaged.

The Exhibition, however, attracts its admirers to the number of from 50 to 60,000 daily, and one never tires of visiting it, for after days of examination there is still something to be seen that is interesting and had not been seen before. The Western Annexe, where the machinery is in motion, is exceedingly attractive. The effect of the vast amount of machinery in motion, and doing all sorts of work, is almost bewildering; the hum is inconceivable by those who have not heard it, and yet all seems to work with life-like and



wonderful precision and nicety. One cannot help being astonished at the many proofs of the ingenuity and industry of man in the displays here to be witnessed.

Numbers of Canadians have arrived within the last two weeks. It is said that there is now an addition of a million of visitors to the population of London.

To-morrow the Jurors of the Exhibition will terminate their services by assisting at the ceremony of distributing the prizes. It will no doubt be a grand affair, and there are to be distinguished persons from every country present. The position that would have been occupied by Her Majesty, had her lamented consort been still alive, will be occupied by the Duke of Cambridge. As a juror I shall have to take part in the procession and ceremony, and the day after I shall be at liberty to leave this great city, to make some brief visits to other parts of the country, preparatory to my return home. The weather still rainy. There have not been two fair days in succession since the first of June. Some people are of opinion that there will be a short crop in consequence of so much wet. There is however a difference of opinion on this subject. As there is a great difference in the weather in the various parts of the country, there is a difficulty in forming a correct opinion of the state of the crops. Mr. Prout, who visited his farm yesterday, only 30 miles distant, says he found there had been scarcely rain enough for the turnip crops, yet the very frequent showers were retarding the hay-making very much. There seems to me to be a great difference in the weather this year from what I experienced in 1851. The month of June that year was fine, and appeared to be very little different from the same season in Canada, but this year it is wet and cold almost all the time. I trust that there has been a favorable change in Canada, and that the crops are coming on well.

Yours, &c.,  
E. W. THOMSON.

### "A. World of Itself."

A correspondent in London thus writes to the *Presbyterian Witness* of Halifax, N. S., of the Canadian Department of the Exhibition:

CANADA.

Canada is a world in itself, anxious to make a show and able to do it. The Canadians have bestowed immense pains on their department and have gone to great expense. They have no fewer than four Commissioners here in charge, besides a number of subordinates. Sir W. Logan is here to look to the mineral and geological section, and assuredly he has made the most of it. They have been able by hook and by crook to exhibit about £500 worth of gold; but they carefully lock it up every night in a safe for fear no doubt that if any one were to run away with it Canadian gold fields could

never replace it. There is a strong force of police inside and outside the building, day and night; and this being the case it is no wonder that the over cautiousness of the Canadians excites amusement. The Lumber of Canada is displayed to great advantage in a pyramid whose top reaches not quite to the clouds but sufficiently near them to be alarming. Canada wheat yields only to that of Australia.

The Photograph department is very superior—indeed it is equal if not superior to anything executed in England—especially in *untouched* portraits. Our friends make the most of their magnificent scenery. Here is Niagara in fifty different forms—in oil, in water, in light, in lead, in ink; Niagara with all the bearding icicles and threatening icebergs of winter; Niagara in all the loveliness of summer—in moonlight, in sunlight; from the American side and from the Canadian side. Many other scenes are here in photograph or some other style.

We must confess it—all the lower Provinces together fail to make the impression that Canada easily produces. The space assigned to her is equal to all the rest, and she occupies it well. Her wooden trophy is overdone however, and it is no wonder the *Times* calls for its disappearance. But her minerals, her manufactures, her lumber and timber, her grain—all demonstrate her wealth and greatness. If the Canadians do not become a powerful and opulent people it is not the fault of the country. By a curious oversight, she has no place in the *Official Catalogue* issued by the Commissioners here. No doubt this will be remedied by and by; but it has annoyed the Canadians a good deal. A similar oversight happened with regard to Prince Edward Island.

THE COW.—When George Stephenson, the celebrated Scotch engineer, had completed his model of a locomotive, he represented himself before the British Parliament and asked for the attention and support of that body. The grave M. P.'s looking sneeringly at his invention said: "So you have made a carriage to run only by steam have you?" "Yes, my lords." "And you expect to run on parallel rails, so that it cannot get off, do you?" "Yes, my lords." "Well, now, Mr. Stephenson, let us show you how absurd your claim is. Suppose when your carriage is running upon those rails at the rate of twenty or thirty miles an hour, if you're extravagant enough to even suppose such a thing is possible, a cow should get in the way. You can't turn out for her—what then?" "Then 'twill be bad for the cow, my lords."

### Agricultural Intelligence.

#### Agricultural Exhibitions this Autumn.

PROVINCIAL AND STATE.

Upper Canada, at Toronto, September 22nd—26th.

Lower Canada, at Sherbrooke, 17th, 18th and 19th September.

New Y. State, at Rochester, Sept. 30 to Oct. 3.

Illinois State, at Peoria, Sept. 29 to Oct. 4.

Ohio, at Cleveland, September 16 to 19.

#### COUNTIES.

Stormont, at Cornwall, Oct. 8th and 9th.

North Simcoe, at Barrie, Oct. 1st.

Brockville, at Brockville, Sept. 18th and 19th.

South Simcoe, at Bradford, Oct. 2nd.

Durham West, at Newcastle, Oct. 9 and 10.

North Lanark, at Almonte, Sept. 16th.

Russell, at Osborne, Sept. 30th.

Peel, at Brampton, Sept. 17th and 18th.

North Leeds & Grenville, at Frankville, Oct. 1.

North Ontario, at Prince Albert, Oct. 7th.

East York, at Markham Village, Oct. 9th.

### Meeting of the Board of Agriculture.

The Board met, pursuant to notice, on 23rd ult at the office, Toronto, at 2 p.m.

Present Messrs. R. L. Denison, A. A. Burnham, W. Ferguson, F. W. Stone, Hon. G. Alexander.

Mr. Denison, Vice-President, in the Chair.

The following communications, reports &c., were submitted and read by the Secretary.

Report of the Building committee of the new Agricultural Hall, dated March 28, 1862, showing that according to statements submitted by the Architect, Mr. Sheard, the work originally let by contract would exceed the estimate of \$12,000 by about \$400 or \$500. Certain additional work suggested as necessary, viz: glass case for shop, counter, hoist, iron shutters, gas and water pipes, would amount to about \$1043 more, while the Architect's commission and incidental expenses would bring up the entire cost of the building to about \$14,000. The Committee decided that these additional details should be proceeded with, leaving the question of any additional rent to be paid by Messrs. Fleming & Co., in consequence of additional expenditure for their accommodation, to be decided at a future meeting of the Board. The report also contained a draft of the lease proposed to be given to Messrs. Fleming & Co., of the portion of the building to be occupied by them: Messrs. Fleming & Co., to pay at the rate of \$800 per annum in half-yearly payments, subject to any additional charges that might be agreed upon, as already mentioned, and their occupation to commence on 1st August next.

Report of the Committee appointed at a former meeting to procure suitable buildings for veterinary stables, submitting draft of a lease of premises on Temperance street, the property of Mr. John Worthington, which the committee had agreed to take for the purpose, and had caused a suitable office to be fitted up upon them for Mr. Smith, the Veterinary Surgeon; the Board to pay Mr. Worthington \$200 per annum in half-yearly payments; the lease commencing from 1st January last.

Circular of an association established in the United States, called the "Association of Breeders of Thorough bred neat Stock," for the

purpose of publishing a record of pedigrees, and soliciting the cooperation of breeders.

Letter from Professor Daniel Wilson, dated April 2nd, 1852, on behalf of the Canadian Institute, requesting to be informed whether the Board would rent a part of their new Agricultural Hall on Yonge Street, for the accommodation of that body. In reference to this application Professor Buckland, on behalf of the committee appointed at a former meeting to confer with the Institute, reported that they had come to the conclusion that the Building was not sufficiently capacious to afford the accommodation desired by the Institute.

Letter from the acting Secretary of the Bureau of Agriculture, Quebec, April 2nd, 1862, stating that the six flax scutching machines ordered by the government from Ireland, had arrived, one of them was presented to the Board of Agriculture of Upper Canada, one would be sent for the present to Kingston, and one to London; the other three would be distributed in Lower Canada.

The Secretary stated in reference to this letter that the mill presented to the Board had been received and experimented with, and that at present it was at Newcastle, in West Durham, where it had been lent to parties to scutch some flax grown in that neighborhood.

Copy of Lease received from Mr. Worthington of premises for Veterinary Establishment, in accordance with the Report of Committee.

Copy of Lease granted to Messrs. Fleming & Co., of part of the New Agricultural Hall, in accordance with the report of Building Committee, these two leases, having both been executed and signed by the President of the Board on April 16th last.

Policy of Insurance of the new Agricultural Hall in the British American Insurance Company for the sum of Two Thousand Pounds, at the rate of half per cent per annum.

Letter from the Hon. Mr. Evanturel, Minister of Agriculture, Quebec, July 19, regretting his inability to attend this meeting of the Board.

Letter from the Acting Secretary of the Bureau of Agriculture, Quebec, July 19, 1862, enclosing copy of letter from Mr. W. Wagner, Canada Government Emigration Agent for Germany, asking for samples of Canadian grain and seeds of forest trees to be forwarded to the Prussian Society of Acclimatization.

Letter from the same, accompanying copies of the first and second Annual Reports of the Board of Agriculture of the colony of Victoria, Australia, for the years 1860 and 1861.

Mr. Denison reported that in accordance with instructions of the Board he had taken measures to defend the suit instituted by Mr. Alexander Campbell, of London, for payment of the sum of about \$600 for work on the Exhibition Grounds at that place, as referred to in a letter from his solicitor, submitted to the Board on January 30th last, and which work the Board considered should have been paid for by the Committee, but that the case had been decided against the Board by the court, and he had accordingly paid the amount.



Mr. Denison also reported that he had recently proceeded to the city of Hamilton, to endeavour to collect the sum of about \$20.00 due to the Association from the Local Committee and the Corporation of that city since the Exhibition of 1861, but had not been able to effect any satisfactory settlement.

It was then moved by Mr. Buckland, seconded by Mr. Stone, and Resolved,—that as early in the season as possible, collections of seeds, &c., be forwarded to the German Society of Acclimatization in accordance with the request transmitted through Mr. Wagner, and that copies of documents of this Board, and specimens of products, be also forwarded to the Board of Agriculture of Victoria, Australia, in accordance with the request of that Board.

*Resolved*,—That the County and Township Agricultural Societies, and individuals, be invited to forward specimens of natural products, seeds of forest trees, grains, &c., for the Museum of this Board in the Agricultural Hall.

*Ordered*,—That the Flax Scutching Mill presented to the Board by Government be exhibited at the approaching Provincial Exhibition, and samples of flax obtained for the purpose of showing it in operation.

The Board then adjourned to 9 a.m. to-morrow.

Thursday, July 24, 1862

The Board met at 9 a.m., in accordance with adjournment.

Present: Messrs. Denison, Burnham, Alexander, Stone, Ferguson, Buckland.

Minutes of yesterday were read and approved.

Attention was called to the circumstance that very few County or Township Agricultural Societies give notice of the time of holding their Exhibitions in the Journal published by the Board, as they are required to do by law, and it was ordered that Societies be requested to give such notices regularly in future.

The Board then adjourned.

#### COUNCIL OF THE ASSOCIATION.

The Board met as Council of the Association at 10 a.m.

Present: The same members as above named.

Mr. Denison, Vice-President, in the chair.

The Minutes of last meeting were read and approved.

The following communications, Reports, &c., were submitted and read by the Secretary:—

Letters from W. Armstrong, Esq., Toronto, March 24th, applying for the appointment of Superintendent of the Fine Arts Department of the Exhibition, and also desiring to be informed whether facilities would be afforded for taking Photographs of objects at the Exhibition.

Letter from the Governor General's Secretary, dated, Quebec 19th April, 1862, enclosing copy of a despatch from his Grace the Duke of Newcastle, Colonial Secretary, conveying Her Majesty's Gracious reply to the Address of condolence from the Agricultural Association of Upper Canada at their Convention in January last.

Letter from Mr. R. L. Denison, dated Quebec 28th April, referring to the days appointed for

holding the Provincial Exhibition of Upper Canada this year, the New York State Agricultural Society having fixed upon the same days, which circumstance subsequently led to a different week being selected for the holding of Exhibition from that first decided upon by the committee.

Report of the Committee for preparing the Prize List, submitting a copy of the List as printed in accordance with instructions of the Board.

Letter from Mr. Geo. E. Pell, Bradford, June 12, applying for appointment of Superintendent of the Fine Arts and Ladies' Departments.

Letter from Mr. A. B. Bennett, Brantford, June 27th, enquiring whether suitable facilities would be given for the exhibition of a Steam Saw-mill, and other machinery, in operation on the ground, at the approaching Provincial Exhibition.

Letter from Messrs. Jacques & Hay, Toronto, desiring to be informed whether the Association would compensate them for the new planed floor laid in the Crystal Palace on the occasion of the visit of His Royal Highness the Prince of Wales, for purposes of the Corporation.

Letter from Mr. W. C. Cain, Wroxeter, Co. Perth, desiring to be informed on what terms the privilege of erecting a tent for photographic purposes within the Exhibition grounds will be given.

Letter from W. Edwards, Esq., Secretary of Local Committee, stating that he had notified that Committee to meet the Council of the Association at the Board Rooms this day, at 11 a.m.

On motion it was then

*Resolved*,—That W. A. Cooley, Esq., of Ancaster, be appointed General Superintendent of the Exhibition.

The names of certain gentlemen resident in the neighbouring States were submitted and approved of to be invited to act as judges of cattle at the approaching Exhibition, and a Committee was appointed for the purpose of selecting judges from the nominations of the County Societies for the classes generally.

*Resolved*,—That the President of the Board of Arts, the Vice-President of the Board of Agriculture, Professor Buckland, and the two Secretaries of the Association, be a committee for fitting up the interior of the Crystal Palace.

*Ordered*,—That the amount charged for the exclusive privilege of putting up one photographic tent within the Exhibition enclosure be twenty dollars.

*Ordered*,—That the Committee appointed to fit up the interior of the Exhibition building be also instructed to provide suitable motive power for machinery.

On motion it was resolved,—That His Excellency the Governor General and certain other distinguished persons who will probably be in this portion of the Province next September, be invited to visit the Exhibition.

*Resolved*,—That Mr. W. Armstrong be appointed Superintendent of the Fine Arts department of the Exhibition.

The Council then adjourned, for the purpose

of receiving the local members of the Local Committee, and to hold a meeting of the said Committee.

The Council resumed at 2 30 p m

Present: Messrs Denison, Alexander, Burnham, Stone, Professor Buckland, Hon. D. Christie, Dr. Beatty.

Moved by Hon. D. Christie, seconded by Hon G. Alexander, and

*Resolved*,—That the Local Committee of the City of Toronto be called upon to report to this Board by the 1st of August the state of their preparations for the coming Show, and at the same time to state what quantity if any of the work still remains to be done, and if they have any means at their disposal to do such work.

Moved by the Hon. Mr Alexander, seconded by Dr Beatty, and

*Resolved*,—That the members of this Board having inspected the cattle sheds erected by the Local Committee are of opinion that they have been placed too low for the preservation of the building and comfort of the stock, and should be raised, if possible, before the Exhibition.

Moved by Mr. Burnham, seconded by Mr. Alexander,—That after receiving from the Local Committee the report called for by Mr. Christie's Resolution, a committee of this council be appointed to provide for and erect in a temporary and cheap manner any other accommodation required, and that such committee be composed of the President of the Association, the President and Vice-President of the Board of Agriculture, and Professor Buckland.

*Resolved*,—That the following gentlemen be appointed a delegation to attend the New York State Show for the current year, viz: Messrs. Christie, Burnham, Stone, Denison.

The Council then adjourned.

### The Royal Agricultural Societies' Show in London.

The recent Exhibition of the English Society appears to have been very successful, although in point of visitors it scarcely came up to a few previous years, when the Show was held in the centre of some of the immense populations of the northern counties. The Highland Society suspended its usual exhibition, and large numbers of Scottish Live Stock added much to the interest of the imposing and instructive scene. There was also a considerable number of Foreign cattle, from the different countries of Europe,—We subjoin the following general description of the Show from the *London Agricultural Gazette*.

The first continuous week of fine weather of which the present season can boast has fallen to the lot of the Royal Agricultural Society, and

thus its meeting, which cannot fail of being successful, has been agreeable as well as useful. The earlier days of the show were indeed attended but by very few. A smaller number were present on Monday and on the following day than have attended on the opening days of any of the recent meetings of the Society, but that has no doubt been owing to the knowledge of the usual attendants at these meetings that the yard was to remain open for so much longer than usual, while the unaccustomed "million" beside whom the Society has this year taken up its temporary abode, are probably waiting for the shilling days of the following week; and the Society benefits indirectly if not directly from the comparatively vacant first days of its show by the longer opportunity thus given of making the existence of the Exhibition known among those who are to throng its yards on Monday.

The yards have never before been so attractive. The Implement Catalogue fills 400 pages and describes 5000 agricultural machines; the Catalogue of the Live Stock show fills 150 pages, and enumerates upwards of 2000 animals. There are 250 Short-horns, 100 Herefords, about 70 Devons, 30 Sussex cattle, 14 Long-horns, 27 Norfolks, 11 Welsh, and 9 Irish cattle, 33 from the Channel Islands, 48 of the polled breeds of Scotland, 27 Kyloes, and 70 Ayrshires—a noble show of British breeds. The Horse classes include 260 animals. 73 lots of Leicesters, a score of Lincolns, 92 lots of Ootswolds, 50 Kentish and other Long-woolled sheep, 69 lots of South-downs, as many Shropshires, about half as many West County Downs, 60 lots of Oxfordshire Downs, 13 lots of Dorset sheep, and about 100 lots of Blackfaced Cheviot and other mountain breeds, make up the show of sheep. There are 200 lots of Pigs exhibited, and there are nearly 200 foreign cattle of various kinds.

Whether as a whole, or taken in detail, the Show is altogether unrivalled. Our own leading breeds have never been better illustrated; those of more local interest have never before been anything like so well represented at any English meeting. And to these we have at Battersea to add all the additional interest of many foreign kinds. The scientific man has here a more striking illustration than has ever before been seen at once of the influence of circumstances upon the form and character and habits of an originally common stock—the practical man has here a larger variety and scope from which to choose the live stock best suited to his own particular circumstances—the mere spectator has a more picturesque variety, a greater quantity and a larger field. In particular the foreign breeds and their attendants are a most interesting addition to the ordinary attractions of the show yard. We have the Dutch dairy breed, black and white, and large and course, but yielding abundance of good milk; and the large Swiss dairy breed, also black and white, or



yellow and white, which, with their neck-bells and attendants, are here one of the leading features of the show. The French sorts are represented by (a) the Normandy, a large course particoloured breed, chiefly dark, brindled brown and dun; (b) the Flemish, chi fly red, reminding one in form of Short-horn cows, and in colour frequently of Devons, or more exactly of the dark red Gloucester cow; (c) the Charolaise, a pure white breed of great beauty and symmetry; (d) the Pyrenean, of a light dun or yellow colour; and (e) the little black and white breed of Brittany, of which an unusually large number is exhibited.

Few of the classes, however, are well filled, the exception being the Bretons, Dutch, and Swiss. Of the beautiful white Charolais but three specimens are shown. We add that there are very instructive and good classes of Spanish, and Saxony Merino sheep exhibited. Readers must be referred to the particular reports which will be found in our columns during this and following weeks for a more detailed account of the several sections of the Show. It may however be mentioned here as of general public interest that the stock shown by the Hon. Colonel Hoop, bred at the PRINCE CONSORT'S Flemish, Norfolk, and Shaw Farms, Windsor, have achieved their full share of success. It will be seen that the first prize in the old Hereford Bull Class and in the young Devon Bull Class are taken by MAXIMUS and CROWN PRINCE respectively. The former had been shown as a calf at Warwick, where he took the first prize in his class. His dam *Superb* was the winner of the first prize of her class at Salsbury, and was there sold to H. R. H. the PRINCE CONSORT. CROWN PRINCE, on the other hand, has also been successful before. He was shown at Leeds and took the first prize in the calf class. The other successes which have attended the stock of H. R. H. the late Prince Consort will be found in our prize list. The stock entered from the Prince Consort's Farm by the Hon. Colonel Hood included 5 Short-horns, 9 Herefords, 4 Devons, 1 Clydesdale horse, and 3 lots of the Windsor breed of pigs.

\* \* \* \* \*

The "several thousand pounds" which the Battersea meeting has cost the Agricultural Society, are money laid out most strictly in accordance with the aim and purpose for which the Society was instituted. Nothing is more satisfactorily ascertained than that agricultural progress depends infinitely more upon the demand for agricultural produce than upon any little artificial excitement which a prize or an award of any kind can give. But agricultural progress is the end and object of the Agricultural Society, and how could its funds be better invested than in giving an opportunity to our stock breeders and our agricultural machinists of displaying their unrivalled wares among the great body of for-

eign agriculturalists who are now thronging our metropolis? And so far as we have the means of ascertaining, the opportunity thus given at so much cost to the Society, has been seized. Stock has been sold in large numbers at great prices, and a large sale of implements has taken place. Confining ourselves to one leading feature of the show, we understand that of steam cultivating machinery Mr. Fowler has already sold at Battersea some £14,000 worth, and that Messrs. Howard have disposed of 12 or 14 sets—this being but the beginning of the results in which this show will land them. The meeting cannot fail, we feel sure, of placing the machine makers and the Society on more cordial terms with one another than has lately been the case. A body which sacrifices so liberally of its means for *their* benefit, as being that of English agriculture generally, will command their support. And this great proof of its energy and life which it has thus displayed will strengthen its foundations in the goodwill and co-operation of English agriculturists, where they will lie much more safely and satisfactorily than in having a large balance at their bankers or a large invested property against "a rainy day."

The following are the numbers of the visitors on the several days of the Show and the sums actually received. We understand that the total cost of the meeting exceeds £14,000, so that there is a considerable deficit to be made good by the Society notwithstanding the large receipts on the last five days:—

|                                               | No. of<br>Visitors. | Price of<br>Admission. | Actual<br>Receipts. |
|-----------------------------------------------|---------------------|------------------------|---------------------|
|                                               |                     | s. d.                  | £ s. d.             |
| Monday, June 23 ...                           | 363                 | 2 6                    | 46 0 0              |
| Tuesday, June 24 ...                          | 806                 | 2 7                    | 102 5 2             |
| Wednesday, June 25 ...                        | 1,146               | 2 6<br>and 20s.        | 697 15 5            |
| Thursday, June 26 ...                         | 5,873               | 5 0                    | 1,467 1 7           |
| Friday, June 27 ...                           | 10,056              | 2 6                    | 1,261 3 0           |
| Saturday, June 28 ...                         | 8,681               | 2 6                    | 1,082 4 2           |
| Monday, June 30 ...                           | 28,112              | 1 0                    | 1,504 15 6          |
| Tuesday, July 1 ...                           | 38,131              | 1 0                    | 1,911 6 8           |
| Wednesday, July 2 ...                         | 31,217              | 1 0                    | 1,566 15 7          |
|                                               |                     |                        | 9,539 7 1           |
| Catalogues sold (an unprecedented number) ... |                     |                        | 1,050 0 0           |
| Received on entries about ...                 |                     |                        | 1,500 0 0           |
| Total receipts—about ...                      |                     |                        | £12,000 0 0         |

There can be no doubt that the agricultural machine makers have exerted themselves nobly to make use of the great market which the Society has thus provided for them: and as little is there of the great efforts and success of our stock breeders and flock masters. That the Short-horn breeders have been fully alive to the advantages thus offered to them plainly appears from the enormous classes of magnificent animals they have exhibited. How great the advantages within their reach we have endeavoured to

show in some further remarks upon the subject in another column.

The Hereford and Devon breeders too have been wide awake. There never have been finer shows of all our leading breeds, and this is also true of the more strictly local kinds—The Ayrshire, Galloway, and Kyles; the Sussex, Norfolk, and Channel Islands.

Of Sheep too the display has been magnificent. The Leicesters probably have been equalled formerly, and the Southdowns have been equal to anything that has been seen in former years. But look at the advance here made in public estimation by other classes. The immense display of that lordly sheep the Cotswold, owing probably the local indignation excited by an imagined slur thrown on them by the Society, has never been surpassed. Carrying wool which is now of the highest market value, the quantity of surface bearing it—unlike that of the Merino disposed in ugly folds and wrinkles, which are detested on the score of increased quantity of fleece—is spread tightly over one of the best formed carcasses of which the perseverance and intelligence of our breeders can boast. Both mutton (for quantity) and fleece (for quantity and quality) are unequalled by any other kind; and it is well that the spirit of the Cotswold breeders has been called forth to make such a magnificent display as is here exhibited.

The Shropshires, too, are a splendid show, and of some other breeds reports will be found in other columns.

It is impossible to doubt that a collection so multifarious and so large, and in either view extraordinary as the produce of "a little island in a Northern sea," thus displayed before men of all countries, and fully alive to the importance of improving their own agricultural resources, must prove of immense service to English agriculturalists.

#### TRIAL OF STEAM PLOUGHS AND CULTIVATORS AT FARNINGHAM, KENT, UNDER THE AUSPICES OF THE SOCIETY.

We take the following from a correspondent of the *Irish Farmer's Gazette* only premising that the display of implements and machinery in Battersea Park is said to have been unrivalled, both as to extent, quality, and practical adaptation: although no money awards were given on the occasion. This opportunity of bringing their productions before the eyes of the most intelligent and enterprising agriculturists from all parts of the civilized world being deemed a sufficient compensation by the makers.

#### STEAM CULTIVATION AT FARNINGHAM, AND NOTES OF THE SHOW.

"On Thursday, Friday, and Saturday the trial of the different steam cultivators will

take place, at Farningham, Kent; 24 miles from the Victoria Station, London. Trains every hour. This was the announcement in all the journals; it was enough to bring out the agricultural world in force to see a rare and, to them particularly a very interesting sight. So we went. The very first thing that struck us was the great preponderance of foreigners at the station—the Babel of tongues, in which English, decidedly did *not* predominate. A great many were going; the fare was very moderate; and the day, for London, usually fine. The only drawback was the extreme probability of accident, which they manage rather regularly on this line; and as we didn't start for a quarter of an hour after the proper time, we expected *something*, as a matter of course.

Twenty-four miles from London! That is a pretty stretch—that should bring us into the veritable country; far from London brick and mortar. But it didn't; for 16 or 18 miles from the Victoria Station, and it is the great city still. Everywhere along the line you see new villas rising, grounds cut up into building lots, large painted boards on either side with "This freehold to be sold for building; everything done with an eye to its becoming a suburb of London. Occasionally you see dairy or fattening cattle in luxurious old grass; sheep and lambs, almost wholly west country Downs—a large, coarse species, not much known in Ireland, on indifferent pasture, but now and then on clover or vetches, in pens; the hay harvest nearly over, and the country in all its glory. But a doomed country soon to be ran over by the bricklayer. At St. Mary Cray the country begins to appear in its natural state, and for the first time, to the native Irish eye, a strange production; not fields so much so as patches of hops, growing like enormous vines. Tickets, gentlemen—next station is Farningham. We arrive—we see all around the smoke of the steam engines in the fields; we are in haste to be off across the country; when some one discovers a traction engine and three waggons ready to draw us along the way to the working ground. We jump in—off we go, down an incline easily enough, slowly around a sharp corner to the left, and along a level road; painfully and slow up an ordinary, farm wagon way; great whistling of engine, rush and scramble, and we are beside Fowler's steam plough, going steadily, and doing its work thoroughly well. There were three different kinds of Fowler's apparatus on the ground and working, but to my eye there was only *one*; his plough, turning four furrows—*charrue a quatre socs*. Next to him was Howard, of Bedford. The ploughing the same in every particular, and the whole finished in a style that you don't see once in a hundred—not in a thousand—times by hand. It was a most unequivocal success; the machinery moved regularly and constantly. There was not a longer



delay at the headlands than would have been in turning in a pair of horses. The ploughs were as entirely under control as they are in the case of the ordinary ploughman; and, indeed, I think on account of the steadiness derived from their weight, a great deal more so. All I can say, in a word, is that it was as well finished, as thoroughly done work, as any farmer could wish to see. There were altogether ten or twelve engines and cultivators at work, but scattered over a circle of at least five miles. Coleman's apparatus did its work very well, smashing up the soil thoroughly, and rather deeper than any of the others. The Woolston system did not show to great advantage, to me at least; and far in the distance was a novelty indeed—two of the local Kent ploughs working by steam. To any one not having seen them, I may say that the rudest old Irish wooden plough is a neat, handy implement in comparison; but such is prejudice, that a gentleman told me they were wholly superior to any, say of Howard or Hornsby's, and that he himself, farming in the vicinity and on a large scale, after giving a trial to the improved implements of these celebrated makers gave them up and returned to the old style, as being the better one. It may be; but *apropos* one is forcibly reminded of the argument of Paddy-go-Easy in a similar case. The land operated upon, in nearly every instance, was clover stubble, rather tenacious in some places, and rather hard and dry in others—in such a state generally, that it could not well have been turned over with an ordinary furrow with a good pair of farming horses. I like the ploughing. Fowler's as well as Howard's because the *entire* green stubble was turned down, the furrows were firmly pressed together, and, I may fairly say, the ground was ready for the seed at one operation. It does not matter that no grain was about being sown; this to me, appears one of its greatest recommendations, that any surface weeds would certainly be decomposed, shut out from the atmosphere between the hard dressed furrows; whilst in the other—the Woolstonian system, as it may be generally designated—though the land, no doubt, is broken up, the surface undergoes but little change, and if at all dirty, after standing some time would again be growing green. It is no practical answer to say that there *should be no surface weeds*; we will hardly ever attain to that perfection in ordinary farming. But if we did, the land at Farningham was very clean indeed; not the slightest trace of coltsfoot or scutch grass; while you might have *immediately* sown the wheat after the ploughs. I don't see how it could possibly have been done after the cultivators.

These are the ideas of a mere Irishman, as between the two systems. I must say the English farmers seem to be pretty equally divided on the subject; and it would be presumption of the first water for a poor Co. Armagh farmer

"to decide" where such "doctors disagree." All the machines on the ground worked along smoothly; some of the engines moving themselves forward as the progress of the work required; others remaining fixed to the same spot all the day. I prefer the former, though each worked well; but, upon the whole, it appeared to me that a great many more hands—men and boys—were required to attend on any of the machines than we usually read of in the papers.

As a wind up, I may add a few notes on things in general touching the district in which the trial was held. It is almost wholly cultivated; grazing, except in the meadows bordering the Darnet, a beautiful though shallow stream, and here flowing over a pebbly bed, nowhere to be seen. Yet it is a district famous for its sheep; and on the record day (Friday), the Messrs. Russel, of Horton Kirby, sold by auction, just adjoining the station, 100 ram lambs of the west country Down breed, at prices varying from £2 6s. to £6 per lamb, or about a general average of £4 10. No doubt, they were about the finest lot of lambs I ever saw, and their breeders widely celebrated—but think of the prices. They were sold in the field in which they had been penned for a month previous, on vetches; a magnificent crop. The pens are formed by hurdles of wicker work, and are a peculiarity of the district. Each hurdle is, say, 10 feet long, with ribs about two feet apart; they are wrought up with hazel, which abounds in the country; also sometimes mixed with clean whitethorn shoots, and are capitally adapted for the purpose. When not used, they are built up in great square piles, 18 or 20 feet high, at the farm-yard, and carefully thatched over. Nowhere here, in a wide district of country, do the sheep seem to be penned on the Irish and common sense system, of giving them a ridge or so at a time, fresh and fresh; leaving them at liberty to quit the ground on which they feed when they choose. By this means the green food is kept sweet as may be, and they eat it with relish to the last. But here, a square pen is put up, with hurdles all round, the shepherd attends on the sheep constantly, they are put at least 100 to the square rood, and kept on that space till the food is consumed, or rather, till they will eat no longer. I think there must be great waste, and the system entirely of a piece with the ploughs.

The first view of the country, from the Farningham station, is wonderfully like that of the grain growing districts of the north and midland of France, and the soil, too, the very same: the cultivation identical. The hills rise in long sweeps; the incline nowhere so great as to tax the strength of the horses. Wheat, rye, barley, oats, some peas, and rarely, beans; winding along the face of the hills, undivided by any fences. Even parish boundaries are merely marked by an occasional stone: all is cultivated.

The barley on an average is equal to the best in Corly, Louth; the wheat (red) all in drills, generally strong, but thin; the white wheat, without an exception, magnificent. It is generally in flower, and so free of weeds. Oats look very poorly, but in every case I saw sainfoin growing amongst it, regular and strong. This will be cut for soiling for years to come. In mangel wuzel and turnips they are not very forward; but in potatoes, as a rule, it would pay the farmers of that district to send a special commissioner on to the Green Isle, to see how we do it. They have a very fair soil and a warmer climate than we, but they are far behind us in this crop. *En revanche*, I heartily wish our people could see how clean the land in green crops is kept; not a weed of any kind showing, and if they won't have a superior crop of potatoes, neither will they have a most undoubtedly superior one of thistles, coltsfoot, and scutch grass. The assemblage was not nearly so large as might have been expected; indeed, the local attendance was nowhere. Hodge plied the hoe, or stared in vacant wonder at the passers by. You asked him the simplest question, he could only gape out, "Doant kneow, shoore!" and I guess he didn't; but as to curiosity to go see the steam cultivation, he had none, neither had his *measther* the farmer, for decidedly on the ground not half the men were English! Here in their own country on a great occasion, in a great undertaking, so specially affecting agriculture, the great British agriculturist was in most limited supply. In the carriage down to Farningham there were six of us—three Germans, a couple of Yankees, and myself; on the ground the foreign element predominated, and returning in the carriage there were four French agriculturists from Tours, who took it so much as a matter of course, that on nearing London, they asked the name of that plant the Rev. Mr. Townsend recommends so much; and I replied, in Ireland we call it "whins," but in English "furze;" one of them exclaimed, "Holt! ce monsieur donc parle Anglais aussi!"—as if it had been a novelty to hear it during the day at all.

As to the show I don't see any marked advance on the previous years in cattle, except the Herefords—a decided improvement. In the foreign section there are some excellent animals shown; some that threw rather an air of astonishment over the settled gloom on the noble countenance of the great Briton. But the show of sheep was complete—there were such pens shown. The Cotwolds outdid themselves; the Leicesters are, I think, a trifle larger than formerly; the south and west country downs are capital; but chiefest of all the Shrops. Horton has taken the first prize this year, the third time successively; and I believe, from some experience, the blood the best in England, or in Ireland either. Captain Broughton this year again secures the prize ram; and those who

have bred from the Cherrymont flock have had reason to congratulate themselves. As an instance of enterprise and judgment in selection, I may here remark that Mr. Adney, of Harley, Salop, who was so successful with his Shrops, and indeed made a name for them, is uncle to Mr. Horton, of Harnage Grange, a young man already famous; a fame which, while there is every likelihood of its being perpetuated, will do what fame does not always do—make them a fortune. Here, from the same flock, in a few years, two men with judgment, and a rare knowledge of business, have produced some of the most famous and valuable rams in the world. The prize pen of Shrop ewes, of the Messrs. Crane, were universally admitted to be the finest ever exhibited. On the whole, this show has been a decided success to the Shrops, and they deserve it: with which, kind reader, farewell.—CURIEUX, London, 28th June, 1862.

### International Exhibition.

Thinking it will be interesting to our readers we subjoin a list of persons in British North America to whom medals have been awarded or Honorary Commendations made for the articles they exhibited at the Cosmopolitan Show now being held in London. Canada has come out of the severe competition much better than could have been reasonably expected, when it is considered how late we were in commencing preparations and the small encouragement offered by the government. Much praise is due to our Commissioners for the industry and judgment they have displayed in procuring an extensive collection of materials, under many disadvantages that is in the highest degree creditable to the intelligence and skill of our people engaged in agricultural and manufacturing industry.

We learn from the report of the Commissioners, that the number of Jurors engaged in determining the persons entitled to medals and honorary mention, was 612, of whom 287 were foreigners, and 325 Englishmen. Their labours were of no ordinary kind, having extended over two months. The number of articles that they had to examine is set down at 25,000; the number of medals awarded by them is nearly 7,000, and "honourable mention" has been made of nearly 5,300 persons. The proportion of awards is greater than in 1851, but not so large as in 1855. The colonies were represented by jurors recommended by Colonial Commissioners, so as



to avoid the slightest ground of complaint on the part of exhibitors.

## MEDALLISTS.

The Commissioners for Canada, for the display of woollen goods and hand-yarns manufactured in the colony.

The Government of Prince Edward's Island, for a very interesting and varied collection of woollens, mixed fabrics, &c., homespun and made, illustrative of the domestic industry of the colony.

Government of Newfoundland, for a very fine collection of skins in silver cross, and red fox, and otter.

W. Coleman, Nova Scotia, for a very choice collection of skins, fine specimens of silver, red, and cross-fox, otter and minx.

McEwen and Reid, Nova Scotia—sofas, chair, and cabinet of native wood—for excellence of workmanship.

—Snell, of Canada, for good machine-made nails.

—Scrymgeour, New Brunswick, for well-made horse shoes.

Captain R. Gaskin, Kingston, Canada, for a collection of agricultural hand instruments.

Tongue & Co., Canada, for an assortment of edge tools highly finished.

Hon. P. J. O. Chauveau, for the merit of his collection of educational journals and reports.

The New Brunswick Committee for the Exhibition, for their collections of woods illustrating the study of botany.

—Downes, of Nova Scotia, for his collection of animals.

Professor Howe, Nova Scotia, for the excellence of his mineralogical collection.

J. M. Jones, Nova Scotia, for his collection of fish.

J. Mosher, Nova Scotia, for good manufacture of blocks on the Bothway principle.

W. Notman, Montreal, for excellence in an extensive series of photographs.

Captain P. Gaskin, Kingston, Canada, for a collection of agricultural tools.

J. Jeffrey, Canada, for iron plough.

J. McSherry, Canada, for iron plough.

J. Morley, Canada, for iron plough.

J. Patterson, Canada, for iron plough.

Whiting & Co., Canada, for collection of agricultural tools.

New Brunswick Commissioners, for a horse-rake.

J. Brown, Canada, for the excellence of manufacture of hydraulic cement.

G. R. Stephenson, as the representative of his cousin, the late R. Stephenson, M. P., F. R. S., for the extraordinary boldness of conception and the great ingenuity of the construction of the Victoria Bridge, Canada.

Larue & Co., Canada, cast iron hollow wheels, for excellence of workmanship and proved durability.

The Executive Committee of Vancouver's Island, for spar of Douglas pine, 220 feet.

Edward Stamp, Vancouver's Island, for a section of *Pinus Douglassii*, six feet diameter, with roof shingles and other timber specimens.

Blaikie & Alexander, Toronto, for dressed flax.

Andrew Bridge, Canada, for a tub on a new principle of construction, exhibiting much taste and ingenuity.

E. B. Eddy, Ottawa, for machine-made wooden pails and tubs, at exceedingly low prices.

C. L. Ingersoll, Canada, for a cask constructed on a new and ingenious principle, for five liquids.

James Lawrie, Canada, for planks and logs, and 21 named specimens of logs from the Ontario district.

Hugh McKee, Canada, for a scientifically-named collection of 98 of the woods of the colony, accompanied with leaves, &c.

T. Moore, Canada, for a large collection of excellent handles for tools and implements in hickory and other woods.

Nelson & Wood, Canada, for whisks and brooms of Sorghum straw, at very low prices, from 1s. 6d. to 6s. per dozen.

Duncan, Porter & Co., Canada, for 19 very fine square logs of timber.

The Abbe Provancher, Canada, for a very extensive, accurately named and extremely well illustrated collection of the woods of the colony, accompanied with dried specimens, useful information, &c.

Samuel Sharp, G. W. R. R., Hamilton, for a magnificent collection of planks, polished slabs, veneers, and a named collection of 26 specimens, from Western districts.

James Skead, Canada, for a magnificent collection of planks, logs, and a scientifically named collection of 27 woods, all from the Ottawa districts.

D. R. VanAllen, Canada, for planks and logs, all magnificent specimens from the Thames district, and 21 scientifically named specimens.

A. L. Triminski, Canada, for magnificent logs of white oak, rock elm, and hickory.

Miss E. Begg, Nova Scotia, for application of native grass to plaiting and bonnet-making.

Miss E. Begg, Nova Scotia, for very fine samples of flax prepared by dew rotting.

Miss Hodges, Nova-Scotia, for baskets, decorated with pine cones and other hard fruits.

Miss Lawson, Nova Scotia, for a collection of forest leaves of the colony, so prepared as to preserve the autumn tint.

—Pryor, Nova Scotia, for a preparation of the fibre of *melilotus leucantha major*.

Local Committee of Prince Edward's Island—for a collection of wicker work, &c., including excellent flax, well dressed.

Miss E. Jardine, New Brunswick—for ornamental work of native seeds.

D. Munroe, New Brunswick—for an excellent

scientifically named collection of 21 woods, veneers, &c., accompanied with specimens, and a volume of valuable notes and observations.

E. Potter, New Brunswick—for fine carving in a wooden box.

Mrs. D. B. Stevens, New Brunswick—for ornamental work in native seeds.

Campbell and McLean, Nova Scotia, cavendish tobacco. Quality of Tobacco used, and quality of article produced.

Barber, Nova Scotia—salmon and lobster; excellence of quality.

J. Cairns, Prince Edward's Island—salmon and lobster; excellence of quality.

D. Brown, Canada—maple sugar; excellence of quality.

New Brunswick commissioners—spiced salmon; excellence of quality.

S. Knight, Newfoundland—preserved salmon and lobster; excellence of quality.

W. Boa, Canada—for all his samples of substances used for food.

R. L. Denison, Toronto—Indian corn stalks; for extraordinary growth.

W. Evans, Canada—for collections of grains and seeds, excellent and interesting.

J. Fleming, Toronto—for seeds and grains, as excellent and interesting.

B. Johnstone, Canada—for samples of Soule's winter wheat, of excellent quality.

J. Logan, Canada—for spring wheat of excellent quality.

County of Peel Agricultural Society, U. C.—(medal to John Lynch, Sec.) for barley, peas, and two kinds of spring wheat, all of excellent quality.

A. Shaw, Canada—for rye of excellent quality.

County of Beauharnois Ag'l Soc'y L.C., (two medals awarded to growers), for flax seed, grown by C. Burguin, for grass seed grown by C. Tait.

J. Wilson, Canada—for oatmeal of excellent quality.

The New Brunswick Commissioners, for the excellence of their collection of substances used for food.

The Commissioners of Newfoundland, for a fine collection of seeds.

R. G. Fraser, of Nova Scotia, for excellent grain, of garden and field seeds.

Local Committee of Prince Edward's Island—for interesting collection of agricultural produce.

Agricultural Board of Upper Canada—for samples of wheat from various counties of excellent quality.

Agricultural Society of Huntingdon, L. C., (one medal to grower), for peas 40 bushels per acre grown by John Penis.

Agricultural Society of Wellington, U. C., for wheat of excellent quality.

Agricultural Society of Wentworth and Hamilton, U. C., (three medals to growers), for blue

stem wheat grown by I. H. Anderson, for red chaff wheat grown by John Smith, for potato oats, grown by A. Gorie, very superior in quality.

Spurr D. Wolfe, New Brunswick, for products obtained by the distillation of coal.

Executive Committee of Vancouver's Island, For collection of Agricultural seeds.

Benson and Aspiden, Canada, samples of Indian corn starch. For the excellent quality of samples.

Canadian Oil Works, Hamilton, for an extensive exhibition of the derivatives of petroleum.

E. A. McNaughton, Canada, flour and potato starch. For the excellent quality of samples.

Parson Bros., Toronto, Canada, for an extensive exhibition of the derivatives of petroleum.

E. Billings, of the Geological Survey, Canada, for his published decades on Canadian fossils, and his valuable general contributions to palaeontology.

English and Canadian Mining Co., for the skill and perseverance with which they have opened their ground, and the discovery of composites conformable with the stratification.

Foley & Co., Canada, for plans of mines, ores and lead, smelted in the colony.

J. Steiry Hunt, of the Geological Survey, Canada, for the instructively described series of the crystalline works of Canada, and his various published contributions to geological chemistry.

Larue & Co., Canada, for excellent cast iron railway wheels made from bog iron ore, which have run 150,000 miles.

Montreal Mining Co., for interesting series of copper ores, accompanied by sections of the workings.

A. Taylor, Canada, for good specimens of crude and prepared gypsum, with plans and sections of the gypsum mines.

The officers of the Geological Survey of Canada, for an admirably prepared selection of specimens, illustrating the mineral resources of the Province.

B. Walton, Canada, for the discovery of good roofing slates.

West Canada Mining Co., for specimens and plans, illustrations of well-worked copper mine.

— Williams (Enniskillen), for introducing an important industry, by sinking the artesian wells in the Devonshire strata for petroleum.

New Brunswick Companies, for general collection of the works and minerals of the colony.

The Government of Newfoundland, for a general collection of the rocks and minerals of the Island.

Rev. Mr. Honeyman, Nova Scotia, for a large collection of specimens illustrating the geology of the colony.

Prof. Howe, Nova Scotia, for collection arranged by him, illustrative of the rocks and minerals of the Province.

Government of Nova Scotia, for the large and instructive collection, illustrating the occurrence of gold.



J. Scott, Nova Scotia, for column of coal, showing the entire height of the seam, 34 feet; one of the thickest known beds in the world.

#### HONOURABLY MENTIONED.

The following is a list of those who are honourably mentioned:

E. L. Betts, Canada, J. Hodges, Canada, and Sir S. M. Peto, Bart., M. P., a collective honourable mention for the successful execution of the Victoria Bridge, and for the ingenuity displayed by Mr. Hodges in constructing the coffer dams for the same.

New Brunswick Commissioners, models of bridges. For the utility of the works represented by the models.

Prof. Howe, Nova Scotia, for goodness of quality of specimen building stones.

T. Scarfe, Nova Scotia, good quality of common and pressed brick, and drain tiles

Balmer & Sheppard, Canada, for the excellence of his white bricks and drain tiles.

Missisquoi Drain Tile Company, Canada, for drain tiles of good quality.

F. Claudet for a series of views in New Westminster, British Columbia.

Bowren & Cox, New Brunswick, for photographic views, being the earliest taken in that colony.

W. H. Adams, of New Brunswick, for railway springs.

— Spiller, New Brunswick, for collection of edge tools.

G. Connell, Nova Scotia, for axes.

Mrs. W. Black, for her models of fruits.

Gordon & Keith, Nova Scotia, for the excellent workmanship of their furniture.

James Thomson, Canada, for his collection of birds.

E. O. Richards, Canada, for model of water wheel.

Fleming & Humbert, New Brunswick, for oscillating steam engine.

W. G. Simpson, Nova Scotia, for model of gold washer.

Government of Prince Edwards Island, for good specimens of tanned landskin rugs.

L. D. Sovereign, Canada, for his combined cultivator and drill.

H. Collard, Canada, for his cultivator.

S. H. Gilbert, New Brunswick, for his model of stone picker.

S. Sharp, Canada, Great Western Railway, model of sleeping and freight cars.

A. Bronson, Canada, for magnificent sections of strobis and white oak.

— Burrows, Canada, for fine sections of "landrus sassafras."

Jacob Choate, Canada, for fine cherry wood and soft maple planks.

— Coutlee, Canada, for named collection of 72 woods of the colony.

O. Gingras, Canada, for fine planks of timber.

Miss Crooks, Canada, for collection of 490 native plants.

F. X. Prieux, Canada, for a named collection of 74 woods of the colony.

E. H. Rose, Canada, for a box of very fine walnut veneers.

— Truman, New Brunswick, for veneers of good quality, and a book formed of inlaid slabs, barks, &c., illustrating the woods of the colony.

N. Norman, Newfoundland, preserved curlew, goodness of quality.

Nova Scotia Commissioners, salted salmon, goodness of quality.

Rev. F. L. D'Heureux, maple sugar, illustrative.

The Agricultural Society of Huntingdon, L.C., for barley, grown by Mr. McNaughton.

The Agricultural Society of Wentworth, U. C., for collection of wheat, goodness of quality.

T. Badham, Canada, for oats of good quality.

J. Logan, Canada for barley, goodness of quality.

A. Shaw, Canada, for Indian corn and marrowfat peas, excellent quality.

C. Wilkins, Canada, Indian corn, goodness of quality.

Miss Bossoult, Nova Scotia, for water colour paintings of native flowers, as instructive.

Dr. Howe, Nova Scotia, medicinal and other plants.

W. H. A. Davis, Canada, for interesting and instructive specimens from a remarkable deposit.

H. T. McCaw, Canada, for fine instructive specimens of ores running with the stratification, and illustrating the structure of the country.

S. Sweet & Co., Canada, for fine and instructive specimens of ores, running with the stratification, and illustrating the structure of the country.

#### Cultivation of Winter Wheat.

From a prize essay in the *American Agriculturist*, on this topic, we select the following paragraphs:

Wheat, one of the greatest staples of the country, if rightly managed, may be made one of the most profitable of our cereals, upon almost any soil. Twenty years' experience has demonstrated to me that we hardly need fail of success, if the following mode of proceeding be strictly followed.

**Selection of Seed.**—Select none but the best seed of bearded wheat. The white chaff is preferable, it being worth some ten cents more per bushel in Eastern markets. Prepare a strong brine—do not depend on old beef or pork brine,—and wash as long as any filth or immature grain rises to the surface. By this process we shall expel from two to three quarts of foul seed and shrunken grain per bushel, from what would be called an "extra" article. Seed prepared in this manner will send up none but the

most hardy and vigorous plants, consequently will be less liable to winter-kill; and as like produces like, we may look for an article in the increase equal if not superior to that which was sown. Add three quarts of dry, fresh-slaked lime to every bushel of wheat; mix up thoroughly two days or two weeks, previous to sowing. *This is important—neglect the lime,* and nine cases out of ten you will have more or less smut, which will depreciate the value of the wheat.

*Preparation of Ground, Seeding, &c.*—The ground, if rich and strong enough, may be sown after peas, otherwise after summer fallow. In either case, manure on the surface, and plow or drag in with the wheat. I prefer to use about fifteen loads to the acre thus prepared; then, after sowing thinly, to plow it in. The seed, by coming in immediate contact with the manure, receives a thrifty and vigorous start, which it otherwise would not attain. This I think is highly important to insure success. I have never used the drill, but in its stead Ide's cultivator, which answers a good purpose. If you harrow in the seed, in no case roll afterwards, as the inequalities of the surface will prevent the snow from blowing off, and the plants will be less liable to be affected by frost. But if covered with a drill or cultivator, this precaution is unnecessary, the seed being so much deeper, and the roots less exposed. When the ground is settled in spring, go over with a heavy roller; it covers many exposed roots and often adds five to seven bushels per acre.

Have the ground well pulverized for sowing; it is useless to sow on lumpy and badly prepared soil. In case there is no manure to be had, cover the surface immediately after sowing and before the wheat starts, with a layer of straw; the wheat in a short time will come through, and prevent it from blowing off. The straw will act as a mulch, and the ground being shaded will retain the moisture; and if the soil is not very poor, you may expect a good paying crop. Two and-a-half bushels salt per acre tends to prevent rust, makes the straw strong and bright, and gives the young wheat a dark color. If any one doubts the truth of this statement, I hope he will make the experiment, and my word for it, he will at once adopt the practice. I know of no better mode to prevent the ravages of the midge than early sowing, and even this sometimes fails. The last week in August, or the first in September, I would prefer but this depends upon circumstances; if the weather is dry and not, I would rather wait until October.—Some years since I made an experiment to test early and late sowing. One piece was sowed the last week in August; one the last week in September, and one the middle of October, on the same kind of soil and treated in every respect alike. There was no difference in the time of ripening or in the quality of the grain, but the

earliest sowed produced the longest heads, consequently yielded more per acre.

I do not sow plaster on wheat, as it tends to rust, and increases the bulk of straw but not of grain.

### A Two-story Milking Stool.

"Something new under the sun," in the shape of a milking stool for kicking and unruly cows, is described by a correspondent of the *Iowa Homestead*. The stool can be made of inch boards, and has many advantages over the old-fashioned one. First procure a piece of board of sufficient size to accomodate the milker, and have, in addition room for the milk pail. This may be put on legs of about eight inches in height. Then upon this erect another seat or stool, covering half the space of the bottom one, for the milker to sit, thereby giving him a chance in front to let the pail remain firm and steady, not liable to get kicked over, and by being up from the ground kept free from dirt and mud, and so close to the udder as to prevent loss from milking over, &c. If a cow is in the habit of kicking, the milker, by using a stool of this description, can have both hands to prevent her heels from coming in contact with the pail, which sits firm upon the front part of the stool, steadied by his knees. He could in a short time effectually break a cow of the habit of kicking while being milked.

## Horticultural.

### Toronto Horticultural Society.

#### SECOND EXHIBITION OF THE SEASON.

The second Exhibition this season of the Toronto Horticultural Society was held yesterday in the Gardens, and was attended by a very large number of visitors. In the afternoon the band of the 30th regiment was present and played a number of select airs. The flowers, fruit, &c., were shown in the large pavilion, which in the evening was brightly illuminated, and presented a very pleasing and attractive scene, crowded as it was with the youth and beauty of the city. In some particulars the exhibition was superior to many which have previously been held by the Society, and in others a great improvement was apparent. There was a magnificent display of foliage and green-house plants, which possessed beauties for every taste and were really the first of their kind. In this department Hon. Judge Harrison was an extensive exhibitor. In one collection of twelve plants from his conservatory, there were some very fine specimens—among them the *Raphis flabelliformis*, not before shown in Toronto, and



the *Crotoria Augustifolia*, a plant whose foliage is very rich and beautiful. These specimens were very generally admired. From the greenhouse of the Hon. Justice Morrison another and equally as fine a collection of plants was exhibited. Chief in this group was the majestic *Cyanophylla magnifica*, with splendidly coloured leaves upwards of two feet in length and fifteen inches broad. The plant exceeded four feet in height. The ladies, who are generally excellent judges, were warm in their admiration of this superb specimen. A new and rare collection of foliage plants from the conservatory of D. L. Macpherson, Esq., was also shown. It embraced some choice and well-grown *Begonias*; a specimen of the *Mammoptoris Nidus*, a rare plant with long, slender, smooth leaves, full hued and rich; and a little *Argyrea tricolor*, the delicate colouring of whose foliage attracted much observation. Of stove-plants Judge Harrison was a principal contributor. Of his collection two were particularly worthy of notice, as being well grown and richly flowered—*Oncidium flexuosum* and *Cattleya Mossiae*. An excellent collection was also exhibited by Mr. C. Young, gardener to the Hon. Justice Morrison, among which was a very pretty plant bearing a yellow flower called *cassia corambosa*. The foliage of this specimen was as choice as the flower was beautiful. In a separate collection of Judge Harrison's, which, by the way, carried off the first prize, were a fine *clero deudron fallax* and another, *Erythrina cristigalli*, both of which excited much comment and admiration. A third collection from the conservatory of the same gentlemen contained several superb specimens of *Gloxinia*, which secured for him the first. They had evidently been carefully nurtured and attended, and deserved the admiration bestowed upon them by visitors.—There was a good display of *fuchsias*, a plant everywhere a favorite because of the graceful rise of its stem and the brilliant and varied colours of its flowers. The choicest lot was shown by Mr. C. Young, the fruit of whose taste and skill was certainly much to be admired. Several specimens of *Calceolaria* were displayed, but they were hardly equal to those shown at former exhibitions. On the whole, the show of hot-house plants was capital, and reflected much credit upon the taste of the gentlemen by whom they were entered for competition.

Of cut flowers the display, although choice and beautiful, was limited. Mr. John Gray, of the "Lakeview" nursery, who has always something very elegant wherewith to gratify visitors to these exhibitions, displayed a superb collection of hybrid perpetual roses, most of them being new importations the first time exhibited in Toronto. Conspicuous in it was *General Jacqueminotte*, a flower which

has carried off innumerable "first prizes" at horticultural shows in England, and which went a great way towards securing Mr. Gray the first prize yesterday, which was so justly awarded him. The *Duchess de Cambacerus* and *Jules Margottin* were other varieties of roses to be seen in the collection, both being superb specimens of the "queen of flowers." Judge Harrison was the exhibitor of another collection of roses, well grown but not equal in point of beauty to those of Mr. Gray. A third, and by no means inferior lot, was from the gardens of Mr. George Leslie, one of the oldest and most experienced nurserymen of this city. An assortment of fine hardy garden roses was shown by Mr. J. Forsyth, of the Normal school; and Judge Harrison displayed some very fine roses of the Bourbon variety—among them the *Isabella Gray*, an American variety of singular beauty. No great improvement on former exhibitions was manifested in verbenas, the chief exhibitor of which was Mr. C. Young. The season is rather early for dahlias, but notwithstanding some very good specimens of this favorite flower were displayed. They were grown by Judge Harrison. The same gentleman and noted horticulturist exhibited some pretty specimens of pinks. The only carnations we noticed were grown by Mr. C. Young. They were well developed and delicately colored. The same gardener exhibited a collection of picotees, and a choice collection it was. Mr. George Leslie showed some phloxes, which, considering the season, were very good. There were some achimenes and balsams on view; and Mr. J. Bain displayed a very good collection of stocks, for which he was awarded a prize. Of table and hand bouquets seven altogether were shown. We missed from the collection the tasteful handiwork of Professor Hirschfelder, who has contributed many handsome collections to the exhibitions of the Society. Some well arranged bouquets were shown, however, by the Rev. E. Baldwin and Mr. J. Brown; and Mr. J. Fleming and Judge Harrison displayed hand bouquets of considerable beauty and merit.

The display of fruits was large and excellent. Cherries, gooseberries, strawberries, currants, raspberries, &c., were shown in great profusion; and most of the varieties were of the largest and best description. Of gooseberries Mr. J. D. Humphreys was a successful exhibitor. The collection for which he gained the first prize was fine beyond comparison—the berries being large, fine flavored, luscious. The chief contributors of cherries were Messrs. George Tattle, J. D. Humphreys, George Leslie, R. Stibbles and J. Grainger. They were all fine descriptions and deserved encomiums heaped upon them. A plate of fine white grapes was shown by Judge Harrison. Although not large they were of fine

flavor and altogether a very superior article. What shall we say of the strawberries, especially of the *Triomphe de Gand* variety, shown by Mr. George Leslie? They were certainly an extraordinary production both as regards size and sweetness. We envy Mr. Leslie the possession of such fruit. The currants and raspberries appeared to possess all the qualities that contribute to excellence. Hon. G. W. Allan, President of the Society, displayed three plates of apples of last year's growth, looking as fresh and plump as if they had just been plucked from the parent stem. Mr. Allen's secret of preserving fruits is a valuable one if the process is always as successful as in this instance. There were four varieties shown—snow apples, which are rarely kept in good condition after December, Pomme-Grise, Spitzbergen and red winter streak. One of the chief attractions of the exhibition was the house orchard trees of Mr. Macpherson, bearing fruit almost ripe and of more than ordinary size. There were pears, peaches and nectarines thickly depending from the branches of small trees not more than five feet in height—all grown in pots under the roof of the green house. It was a truly magnificent display, and did credit to the exhibitor.

The vegetable show was not so extensive as at some previous exhibitions, but everything displayed was of the best description. The lettuce, cabbage, potatoes, rhubarb, cauliflower, &c., were all very good. The principal exhibitors were Messrs. Tattle, J. Grainiger and J. Brown, gardener to Mr. W. H. Boulton.—*Leader, July 17th.*

### Hamilton Horticultural Society's Exhibition.

The second Exhibition of the Hamilton Horticultural Society for this season, was held in the Mechanics Institute, on Friday, 25th inst. By early dawn the gardeners and amateurs, like the birds of the morning were all astir, and might be seen with their various productions carefully wending their way to the Hall, no doubt full of hopes of the coming events.

The hot, and green-houses of W. P. McLaren, R. Juson, John Young, T. C. Kerr, and John Brown, Esqs., contributed largely to the exhibition. The green-house and Stove plants although not so numerous as on the former occasion, were creditable. A collection of Foliage plants from Mr. McLaren was very much admired, particularly a magnificent plant of the *Musa Cavendishii*. This noble plant from its appearance may be expected to flower and fruit next season. In describing a plant of the same species, from the gardens of John Brown, Esq., exhibited at the last May show, when I said in my report of it, that it was called by some the Indian bread tree, this is so far true, but the real

Bread tree it is not. The Bread tree proper, or the plant so called by Linnæus, is the *Artocarpus Incisa*, of the South Sea Islands. I mention this to prevent any misunderstanding.

The prize Fuchsias from John Young and R. Juson, Esqrs., were very good for the time of season, they were much admired, particularly the smallest ones; the taste in growing this fine variety of plants is becoming more refined, the lesser being preferred to the greater. In the collection of Green House plants from Mr. Browns there was a fine plant of *Oncidium Flexuosum*, this beautiful Orchides species is of Brazilian nativity. The Orchidæ are a singular tribe of plants, peculiar in shape and growth, they are famous for their flowers, as well as their odd shapes and unique foliage. Some of their flowers are remarkably strange and curiously shaped. *Oncidium Papilio*, bears a striking resemblance to a butterfly on wing, others to heads and bodies of animals, the tropical varieties are rather difficult to cultivate, particularly those of them which in their nature resemble the parasitical tribe of plants.

The cut flowers were well represented, Stocks, Hollyhocks and Verbenas in abundance. The prize Carnations formed a stand of 12, from the garden of Mr. Wm. Muir, Esq., there were also two seedlings from the same garden which were commended.

The amateurs made a very good show of Cottage window-plants; but not with so many as we would like to have seen. Mrs. Sharp, Dr. Craigie and Mr. Michael were the successful competitors. Mr. Weatherston, an amateur, exhibited some very fine French Marigolds, and double Zinnæas, and carried off the first prizes for the Dahlias and Roses. H. Colbeck, Esq., exhibited a few very fine spikes of *Campanula Medium*, which was very much admired, Mr. T. Racey, nursery man, and Mr. A. Peachy, gardener to E. B. Wood, Esq., Brantford, exhibited collections of Hollyhocks and Antirrhinums, Mr. Mackay from the same place, Petunias, all very worthy of notice.

The Orchard-house trees from the gardens of W. P. McLaren, T. C. Kerr, Esqrs., and Bruce & Murray's nursery, attracted very much attention; they were all in a full bearing state well grown, particularly those from the garden of T. C. Kerr, Esq. The vines from Bruce and Murray's nursery, were of the sweet water variety, two years old; on the one 13, and on the other were 15 clusters of ripe fruit.

Two dishes of Peaches from John Young, Esq., and two dishes of Nectarines from Bruce & Murray's were much admired.

The collection of cherries was large and fine, especially those of Messrs. Freed, Iottredge and Fearman. Gooseberries plentiful, varieties many, those from the gardens of John Young, W. P. McLaren, and John Brown, Esqrs., were the finest we have seen for a long time. Dr. Craigie exhibited Black Greens of the



Scotch kind, they were of a good size and an excellent flavour. Black, red and white Currants and Raspberries were in abundance, a few Strawberries and Tomatoes.

The vegetable department was very full; the potatoes from Messrs. Kelvington, Freed, Taylor and Wildes were excellent; the Peas, better and more fully represented than heretofore. The Rev. Mr. Rice exhibited a pea he calls the String pea, it appears to be a rather a peculiar variety, has very long and broad pods, resembles very much the Kidney bean and may be cooked in the same manner, cabbages, cauliflowers, onions, carrots, turnips, &c. &c., with two very full collections of vegetables from Messrs. Wilds and Kelvington, the whole very creditable to the market gardeners and other growers.

We had a beautiful day, a very good Show, well patronized in the afternoon and evening by the elite and beauty of the city.

Like draws to like, the ladies for the flowers, and the flowers for the ladies.

GEO. LAING.

Hamilton, July 30th, 1862.

### Fruit Growers' Association of Upper Canada.

PROCEEDINGS OF MEETING HELD IN THE TOWN HALL, ST. CATHARINES ON WEDNESDAY, JULY THE 16TH 1862.

#### *Editor of the Canadian Agriculturist.*

SIR—The meeting of the Fruit Growers' Association, called for 16th inst., was organized at 2 p.m., Judge Logie in the chair. The minutes of the two previous meetings were read and approved, after which the meeting went into discussion of the Fruits on Exhibition. Of cherries there was a very fine collection—some 20 varieties.

Mr. W. H. Read, of Port Dalhousie, had a fine sample of cherries, among which was a new variety of great promise, large size, the Monstrous DeMezel. Also, a fine sample of Raspberries.

Mr. Freed, of Hamilton, showed 16 varieties of cherries, of the leading kinds. A really fine collection.

Messrs. Bruce & Murray, of Hamilton, exhibited a superb collection of Gooseberries, 17 varieties, many of them unusually large.

Mr. Meston, of Hamilton, also showed a very fine collection of Gooseberries, some 15 varieties, and two varieties of Plums, one of them was Rivers' early Prolific, a new and excellent Plum.

Mr. Philip Gregory, of Louth, had a fine collection of Cherries, 8 varieties. Among them were some of the best in cultivation—also 3 varieties of large currants, very fine.

Geo. Dean, gardener to Mr. James Taylor, St. Catharines, showed 5 varieties of Gooseberries, very fine, 3 varieties of large currants,

also 5 varieties of Raspberries. The above Fruits showed the effects of good cultivation.

Mr. R. N. Ball, Niagara, exhibited three varieties of cherries, and the yellow cap Raspberry, all very fine.

Dr. Watts, of Niagara, showed a fine bunch of red grape currants—a bunch of white smooth Gooseberries. Also 4 varieties of cherries, very fine.

S. Shaw, of St. Catharines, showed two plates of exceedingly fine gooseberries.

Mr. M. Y. Keating, of Louth, showed a fine sample of red cherry and white grape currants, also Napoleon B gameau cherries.

Mr. Sherlock, of Louth, showed a very fine sample of the black heart cherry.

Mr. T. H. Grydon, of St. Catharines, exhibited a sample of Downer's late red cherry first season of bearing—seem prolific. Also Lanning's new white strawberry, very large and fine flavor. Duc de Malakoff, very large and fine; also British Queen. A ripe tomato, in open air obtained by plunging a pot in the ground. Mr. Graydon has had Duc de Malakoff strawberry to measure 7 inches in circumference the present season.

J. Outhbert, gardener of Thomas Merritt, Esq., St. Catharines, showed 12 varieties of Gooseberries, very large.

A seedling apple from the garden of Sir A. McNab, Hamilton, of last years growth, was exhibited in a fine state of preservation.

Rev. Mr. Dixon, of Port Dalhousie, exhibited a fine sample of Triumph de Gand strawberry; also a variety of white strawberries from Lower Canada, of the Alpine Family.

Mr. D. W. Beadle, St. Catharines, exhibited 11 varieties of cherries, among which was a new seedling, pronounced by the meeting to be an unusually delicious cherry, and if it should prove hardy and prolific, will be one of the very best in cultivation.

Wm. McGiverin, Esq., of St. Catharines, exhibited a very choice collection of plants and flowers, comprising 6 varieties Begonias, 6 varieties of Caladiums, 25 varieties of Anteorhinums and Verbenas. Also 5 varieties of Gooseberries, 3 of currants, 2 of Raspberries, and a plate of black heart cherries.

R. Miller, Esq., placed on the table three plates of cherries; some most noble samples of the Napoleon Bigarreau, unsurpassed by any others exhibited.

Mr. John Tackle, of the Montebello Gardens, sent a beautiful specimen of the Carosinea Speciosa in flower.

Mr. John Holder placed on the stand seven varieties of Begonia, and several other beautiful foliage plants. A fine specimen of that most exquisitely scented Gerdinia Fortunei, in flower, and quite a collection of other showy and beautiful things, among which we noticed particularly Oldenlandia Depii, Streptocarpus Rex, Musa

Caendishii, Calandum Madriana, and that curious Acrosichium Aleicorne, besides some lovely Orchids in full bloom.

At the close of the discussion, the Secretary laid before the meeting a large amount of information, obtaining an answer to the questions of the Association. As the matter was too extensive for consideration at this meeting, a committee was formed, composed of Messrs. D. W. Beadle, James A. Campbell, of Grantham, and P. Gregory, of Louth, to make out a condensed report for the Winter Meeting. The President then read a letter from the Royal Horticultural Society of England, relating to the International Exhibition of Fruits to be held 8th of October, 1862. On motion of Dr. Craigie, seconded by Mr. Murray, it was resolved that the Secretary acknowledge the letter received from the Royal Horticultural Society, and state that on account of the early day named for the Exhibition, it will not be possible for us to send a sufficient number of specimens that are fully colored and matured, to give a good representation of Canadian Fruits.

A vote of thanks was then moved by Dr. Craigie, seconded by Mr. W. Holton, to the Mayor and Council of the Town of St. Catharines, for their kindness and liberality in granting the free use of the Town Hall, for the meeting of the Association.

The meeting then proceeded to the discussion appointed for this session, as follows, taking up the varieties, seriatim.

In order that all persons desirous of sending samples of Canadian Fruit to the International Exhibition of the Royal Horticultural Society may have an opportunity of doing so. I send you a copy of the Secretary's letter to Dr. Hurlburt, and the Prize List.

The accompanying letter from Mr. John Freed, of Hamilton, in relation to the cultivation of the cherry, was received by the Secretary and laid before the Association, also the letter from Mr. Wilson, of Ontario.

The meeting was one of unusual interest.—The discussions were lively and the attendance large, about forty members being present. The members adjourned at 10 p. m. to meet again in Toronto, on the 12th of November next, much gratified with the fine display of fruit and flowers and the information elicited.

D. W. BEADLE,  
Secretary.

St. Catharines, July 30, 1862.

#### DISCUSSION ON FRUITS.

**Black Tartarian.**—Dr. Craigie, of Hamilton. Is one of the finest varieties in cultivation. —Mr. Laing, of Hamilton. It is very prolific, and hardy of its class.

Mr. Murray, of Hamilton. Is one of the best, hardy and prolific.

Mr. Meston, of Hamilton. Is a universal favourite, prolific and hardy of its class.

Mr. Freed, of Hamilton. The best black cherry.

Mr. W. H. Read, of Port Dalhousie. My favourite, the best black cherry, tree hardy.

Jas. A. Campbell, of Grantham. The best and largest cherry.

Mr. P. Gregory, of Louth. A good cherry, and ornamental tree, have some others equally good.

Mr. W. H. Smith, of Grimsby. The best black cherry, hardy.

Mr. S. Taylor, of Pelham. A good bearer, and hardy tree, of first quality.

Rev. Mr. Dixon, of Port Dalhousie. The tree does admirably, recommend for general cultivation south of Lake Ontario and Great Western Railway.

**Elkhorn or—**Rev. Mr. Dixon, of Port Dalhousie. Is an excellent late variety, had never failed with me for ten years, is hardy, have trees 18 to 20 years old.

Mr. R. N. Boll, of Niagara. Is hardy.

Mr. W. M. Smith, of Grimsby. Is perfectly hardy, valuable as a late cherry.

Mr. P. Gregory, of Louth. Has always borne until last year, when I had none of any kind, best late variety.

Mr. W. H. Read, of Port Dalhousie. Is large and fine with me.

Mr. S. Taylor, or Pelham. Is very hardy, and a good bearer. Valuable in its season.

Recommended for general cultivation South of Lake Ontario and G.W. Railway, as an excellent late variety.

**Black Eagle**—Mr. R. N. Ball, of Niagara. Is a fine cherry, hardy and prolific.

Mr. W. M. Smith, of Grimsby. Is next to the black Tartarian, hardy.

Mr. James A. Campbell, of Grantham. The tree is more hardy than the black Tartarian.

Mr. W. H. Read, of Port Dalhousie. Not a great bearer, but quality excellent.

M. Freed, of Hamilton. With me the tree is very productive, and hardy.

Mr. Meston, of Hamilton. An excellent cherry, rather a poor bearer.

Mr. Murray, of Hamilton. Is a fine fruit.

Mr. Laing, of Hamilton, an excellent fruit, but an indifferent bearer.

Mr. T. Taylor, of Pelham. Sweetest cherry I grow, a good bearer.

Mr. Pawling, of Louth. It is my opinion that the above varieties of cherries succeed best in a dry gravelly or sandy soil, do not do well on clay.

Mr. James A. Campbell, of Grantham. Trees grow rapidly on highly manured soil, are apt to burst the bark; received for general cultivation South of Lake Ontario and G. W. Railway.

**Knight's Early Black.**—Mr. P. Gregory, of Louth. I have a tree 17 years old, a good cherry, and prolific.



Mr. W. H. Read, of Port Dalhousie. Had a tree, but it cracked and died.

Mr. Meston, of Hamilton. Is a tree of slow growth, hardy, rather a poor bearer, quality good.

Recommended for further trial.

*American Heart*—Mr. Freed, of Hamilton. Pipers with black Tartarian, quality very good, if not the best; not very prolific, hardy so far as known.

Mr. Murray, of Hamilton. The tree bears young, and is hardy.

Mr. Holton, of Hamilton. Is a very fine cherry, hardy of its class, would recommend it for further trial.

Recommended for further trial.

*Napoleon Bigarreau*.—Rev. Mr. Dixon, of Port Dalhousie. Think it is inferior to Yellow Spanish.

Mr. Jas. A. Campbell, of Grantham. Is more liable to speck and crack than the Yellow Spanish.

Mr. Pawling, of Louth. Is the second to the Yellow Spanish.

Mr. W. M. Smith, of Grimsby. Is very productive, one of the most productive and best market cherries.

Mr. W. H. Read, of Port Dalhousie, very prolific, one of the largest, very fine, and valuable market variety.

Mr. Freed, of Hamilton. A good market cherry, more productive than any other of that class.

Mr. Meston, of Hamilton. Is an exceedingly productive and hardy variety.

Mr. Laing, of Hamilton. A most productive variety.

Mr. Holton, of Hamilton. Can fully corroborate what has been said in favour of this cherry.

Mr. R. N. Ball, of Niagara. Is a great bearer. Recommended for general cultivation, south of Lake Ontario and G. W. Railway.

*Elton*.—Rev. Mr. Dixon, of Port Dalhousie, would recommend it as a very good cherry.

Mr. W. M. Smith of Grimsby. Is a hardy variety, prolific, very good.

Mr. W. H. Read, of Port Dalhousie. Do not value it.

Mr. Meston, of Hamilton. Is prolific and hardy.

Mr. H. Laing, of Hamilton. Is very good and prolific.

Mr. W. Holton, of Hamilton. Is a very valuable cherry for Canada,—one of the most hardy of its class,—will stand but where few of its class will live.

Recommended for general cultivation south of Lake Ontario, and G. W. R. Railway, and for further trial in the more northern parts of the Province.

*American Amber*—Rev. Mr. Dixon, of Port Dalhousie. Is inferior to others of same season.

Mr. Gregory of Louth. Is hardy, medium quality. Not very prolific.

Mr. Read, of Port Dalhousie. With me bears well; good quality, and hardy.

Mr. Freed, of Hamilton. Bears well, medium quality, a good cooker.

Mr. W. H. Holton, of Hamilton. Don't think much of it, is too small.

Mr. R. N. Ball, Niagara. Is a second rate cherry.

Not recommended.

*Early Purple*.—Mr. Freed of Hamilton, about same time as *Bowman's May*.

Rev. Mr. Dixon, of Port Dalhousie. The birds eat all the fruit with me.

Mr. W. M. Smith, of Grimsby, a good early variety. Birds eat all the fruit.

Mr. W. H. Read, of Port Dalhousie. Prefers it to *Bowman's May*.

Mr. S. Taylor of Pelham. Thrives well with me; bears well, a good early sort.

Recommended for general cultivation South of Lake Ontario and G. W. Railway.

*Bigarreau du Mai*.—Birds eat it, is valuable as an early variety.

Mr. W. H. Read, of Port Dalhousie. Is a bird cherry, nothing but skin and bone, not equal to the early purple.

Mr. Freed, of Hamilton. A great bearer.

Mr. W. Holton of Hmailton. Is only valuable as an early variety.

Not Recommended.

*Black Cherry Seedling*—From Sir. A. McNab.

Mr. Laing, of Hamilton. Is a good bearer.

Mr. Jas. A. Campbell, of Grantham. Is a cherry of fine quality.

Mr. Pawling, of Louth. A good cherry, but there are better of the same season.

*Bigarreau*—or Yellow Spanish.—Mr. Jas. Campbell, of Grantham. A hardy cherry of its class.

Mr. Pawling, of Louth. One of the most valuable, hardy, and good bearers.

Mr. W. H. Read, of Port Dalhousie. Is hardy, vigorous, an abundant bearer, flesh firm.

Mr. Freed, of Hamilton. Not very productive with me, but a fine cherry.

Mr. Laing, of Hamilton. Is one of the best cherries.

Mr. W. Holton, of Hamilton. An old Standard sort,—Stands at the head of its class, fine for preserving, and a good market variety. Recommended for general cultivation South of Lake Ontario and G. W. Railway.

*Monstreuse de Meziel*.—Mr. W. H. Read, of Port Dalhousie. Is a very vigorous grower, leaf large. Tree ornamental, is hardy, have a tree six years old, bears well, quality very good.

Mr. Freed, of Hamilton. A very fine cherry of the *Bigarreau* class.

Recommended for further trial.

*May Duke*.—Mr. P. Gregory, of Louth. Bears well, but have been unsuccessful in growing the tree, a good cooking cherry.

Mr. Jas. Campbell, of Grantham. Is the

only cherry I have known to succeed North side of Lake Ontario, is in bearing at Wellington Square, good for cooking, good for market, a valuable variety.

Mr. Laing, of Hamilton. A very good cherry, one of the first of its class, not troubled with the curculio.

Mr. W. H. Read, of Port Dalhousie. A fine cherry, good for cooking, and family use.

Mr. R. N. Ball, Niagara. Very valuable, particularly for its hardness.

Mr. Graydon, of St. Catharines. A first rate cherry.

Mr. W. Holton, of Hamilton. One of the finest for general cultivation. Tree hardy, a good cooking, a valuable variety.

Mr. Freed, of Hamilton. One of the most valuable grown for Canada, ripens its fruit gradually, excellent for cooking and preserving.

Rev. Mr. Dixon, of Port Dalhousie. A valuable variety.

Recommended for general cultivation.

*Late Duke.*—Mr. Holton, of Hamilton. A fine cherry in its season, very hardy.

Mr. Freed, of Hamilton. Is a firm cherry, not as vigorous as the May Duke, hardy.

Recommended for further trial.

*Jeffries Duke.*—Mr. Freed, of Hamilton. Is equally valuable with the May Duke, ripens its fruit a little later, a good bearer, and as hardy as the May Duke.

*Queen Hortense.*—Mr. Holton, of Hamilton. The tree is as hardy as the May Duke.

Mr. Jas. A. Campbell, of Grantham. Tree appears to be hardy.

Mr. D. W. Beadle, of St. Catharines, shewed a fine sample of the fruit.

*Governor Wood.*—Mr. Graydon, of St. Catharines. A splendid cherry, in my opinion the best cherry, a good bearer.

Mr. R. N. Ball, of Niagara. A very fine variety.

Mr. Gregory, of Louth. Promises well, sweet and fine.

Mr. Freed, of Hamilton. The tree grows well, is prolific, the best early cherry, ripens near the same time as the Bigreau, or *du Mai*.

Mr. W. H. Read, of Port Dalhousie. Is well adapted for general cultivation, quality the best, a good bearer.

Mr. Laing, of Hamilton. Is one of the best, a good bearer.

Mr. Jas. A. Campbell, of Grantham. A very productive cherry, of medium size, and good quality.

Mr. Holton, of Hamilton. A good cherry, valuable where it will succeed, one of the best of the Heart class.

Rev. Mr. Dixon, of Port Dalhousie. A very excellent variety, a good bearer, and vigorous.

Mr. Murray, of Hamilton. One of the best, if not the very best, a fine bearer, hardy.

Recommended for general cultivation South of Lake Ontario, and G. W. Railway.

*Belle d'Orleans.*—Mr. W. H. Read, of Port Dalhousie. The best early cherry, large red cheeked, sugary tender pulp, and prolific.

*Transparent Guigne.*—Rev. Mr. Dixon, of Port Dalhousie. Is sweet, very prolific, and hardy, comes in after the Black Tartarian.

Mr. Freed, of Hamilton. Don't think it worth recommending,—is small, late, is not eaten by the birds.

Mr. P. Gregory, of Louth. Value it as a dessert cherry, hangs on the tree well, is good to dry, I prefer it to some others. Not a good market cherry, yet would not like to dispense with it.

*Marvel de September.*—Exhibited by Mr. Freed, of Hamilton, quite green, it is of the Duke class.

*Red Bigreau.*—Shewn by Mr. Freed, of Hamilton. Is hardy, very fine flesh, not as good as others of same class.

*Belle de Choisy.*—Rev. Mr. Dixon, of Port Dalhousie. Does not bear with Mr. D. W. Beadle, nor with me, and this was the general testimony.

*Dover's Late.*—Shewn by Mr. Graydon, of St. Catharines.—First year of bearing it seems prolific.

*Cleavland Bigreau.*—Shewn by Mr. Freed, of Hamilton. Is very productive, a showey grower,—probably tender.

#### GOOSEBERRY.

*Whitesmith.*—Mr. Murray, of Hamilton. One of the best English varieties, least liable to mildew, a fine grower. Should be in every collection.

Mr. Minhinnick, of W. Square. About the best, does well on clay loam, I prune early in the spring, and put on a good coat of well rotted manure each Spring.

Mr. Laing, of Hamilton. I keep them in a moist atmosphere, and moist, not wet soil, I pinch in the stools. Is one of the best varieties.

Mr. W. H. Read, of Port Dalhousie. Is a large firm berry, does not mildew when grown near water. Sulphur is a sure remedy if applied.

Mr. Freed, of Hamilton. Does well, is free from mildew.

Mr. Meston, of Hamilton. An excellent berry, a sure bearer,—not the largest, mildews occasionally, have tried sulphur after the mildew had set in, but it only took the leaves off. High cultivation is a good preventive of Mildew.

Mr. Pawling, of Louth. Without special cultivation sometimes mildews. On a dry clay soil, with south aspect, very subject to mildew. Plaster of Paris is a good preventative.

Mr. Gregory, of Louth. Even native varieties mildew with me.



Mr. Thos. Shaw, of St. Catharines, exhibited a fine sample of Whitesmith Gooseberry, grown on dry gravelly soil, free from mildew.

Recommended for general cultivation.

**Warrington Red.**—Mr. Meston, of Hamilton. Is the best Red Gooseberry, an excellent bearer, not the largest, sometimes mildews, has a weeping habit, and very thorny.

Mr. Murray, of Hamilton. The best Red Gooseberry, a very fine bearer, not free from mildew, a showey grower, and weeping habit. Recommended for general cultivation.

**Crown Bob.**—Mr. Murray, of Hamilton. A first rate variety, very large, full bearer, a little subject to being scalded, not free from mildew.

Mr. Jas. A. Campbell, of Grantham. I have near all the English varieties, and they are most of them moulded.

Mr. Minhinnick, of Wellington Square. Is not as good as the Whitesmith, but very good, is not subject to mildew with me.

Mr. Freed, of Hamilton. Mildews worse than the Whitesmith with me.

Recommended for general cultivation.

**Sulphur Yellow.**—Mr. Murray, of Hamilton. Is one of the best early yellow varieties, a very vigorous grower.

Recommended for general cultivation.

**Houghton Seedling.**—Recommended by the meeting as not being subject to mildew.

**Heart of Oak.**—Recommended by Messrs. Meston, Laing, and Murray, of Hamilton as a very large and excellent variety.

Ontario, Wentworth County, }  
15th July, 1862. }

*Letter from Mr. Wilson.*

To the Chairman of the "Fruit Growers Association,"

SIR,—As I cannot have the pleasure of attending your meeting, at the last moment I have snatched a little time to pen a few remarks upon Horticulture, which may contribute perhaps some useful information. As to the culture of the Gooseberry we have always been successful for many years, and never were plagued with the mildew; our garden is heavy rich clay loam; the kind we raise is the large oblong, green English variety, a sample of which I enclose for the Society to name. I believe that no one will be troubled with mildew if they would haul good clay loam into their gardens, if the location is sandy; the same remarks will apply to the grape vine. The clay soil should be manured from time time, and kept mellow with proper cultivation. They may be propagated by cuttings; new varieties are raised from seed. The cuttings should be taken from the strongest and straightest shoots of the last season's growth, and about 12 inches long. If trained as standards cut out all the buds except three or four

at the upper end, to prevent the appearance of troublesome suckers around the main stem. Experience has shown, however, that the bushes will be longer lived, and much more productive, when permitted to sucker \* moderately, than if the whole support of the top be drawn through a single channel.

By a judicious system of pruning, the bearing wood will be frequently renewed, and the sap will be wasted upon that which has become old and barren.

The cuttings should be inserted about half their length in a bed of rich moist soil, situated on the north side of a fence, or in some shaded spot. In the second year after they are well rooted they may be transplanted to their permanent places, and from 3 to 4 feet apart, or the cuttings I generally plant at once where they are intended to grow. Being exceedingly sensitive to the heat and drouth, they require a soil at once deep and moist. A liberal application of manure should be mixed in the soil at the outset, and also each year when the ground is dug; frequent hoeings through the summer are essential to good cultivation.

HOW TO PLANT FRUIT TREES.

In the Spring of 1851, I purchased 50 apple and peach trees from Dr. Beadle, the peach branches were much winter killed, and I was obliged to cut them short; my ground was, part of it, much worn out and drowned out, the other part was 20 years old, just broken up, there was also a severe drought that season. Under all these disadvantages I planted my trees. The old orchard having been sold off during wild cat times for an enormous sum, I had to plant again and could not wait to prepare the ground.

I lost none out of the 50 the first year, though the growth was slow owing to the drouth, and they did not make much wood to stand the winter, so that this year three of my peach trees died. I got 70 or 80 more trees of various kinds this season, and planted in the same manner and they are all growing notwithstanding the repeated frosts and the long and early drought of 1862. After this I shall think my plan much better than mulching. *Modus Operandi.*—First stake out the ground with a tape, then dig good large holes on the North side of the stake, then haul with a team a good wheelbarrow load of old chaff manure that has been well turned and rotted, put two shovelfuls in the bottom, then a good shovelful of sandy loam, have the roots of the trees dipped well in thick mud, set the tree, then put on sufficient sandy loam to cover the roots, and jar the tree so that the fine soil will descend well amongst the roots, fill up with

\* Several members desired to express their entire dissent from this mode of allowing any suckers.

plenty of manure \* then a light covering of soil. This way of planting immediately enriches the soil, and at the same time keeps it moist. Frequent use of the plough, cultivator and hoe is necessary to good success. Wishing your society every success.

I am gentlemen, yours very respectfully,

FRANCIS G. WILLSON.

*Letter From Mr. Freed.*

Hamilton, July 16, 1862.

D. W. BEADLE, Esq.,

*Sec. of Fruit Growers' Association of U. C.*

DEAR SIR,—The cherry being one of the subjects for discussion to day, I beg to hand you the following note on the native Plum Stock, *Prunis Americana* of Botanists, as an excellent one upon which to bud the cherry; particularly for growing the cherry in pots for orchard-house culture, for Dwarfs, Pyramids, Wall and Trellis training, and for clay or moist soils where the cherry fails.

For Pot culture, I have not the least doubt but that it will supersede the Mahaleb or any other stock, furnishing by root pruning abundance of medium, even sized roots; a most important desideratum in pot culture.

With respect to root pruning the same remark will apply to Dwarfs, Pyramids, Wall or Trellis training. And on clay or moist soils where the Mazzard and Mahaleb stocks have failed, I have not the least doubt but when worked on this plan the trees will succeed to the entire satisfaction of the planter.

In addition to the stock bearing root pruning so well, it is also most remarkable for producing early and prolific blossom buds, fruiting the second year from the bud, and producing fruit of the highest excellence. In fact the Plum stock seems to produce the same effect on the cherry as the Quince does on the Pear.

I have a few trees only. They are now in their fifth year of growth, look very healthy and bore good crops of fine fruit.

These are some of the good qualities I claim for the Wild Plum as a stock for the cherry, and the original introduction to the public.

Yours truly,

JOHN FREED.

*Letter from Secretary of Royal Horticultural Society.*

ROYAL HORTICULTURAL SOCIETY, }  
South Kensington, W., June 14th, 1862. }

SIR,—I am directed by the Council of the Royal Horticultural Society to express to you the pleasure with which they would receive contributions of fruit from the different Societies in

Canada, to their great Exhibition of fruit to be held here on the 8th of October.

I enclose a dozen programmes of the schedules, and beg your kind assistance in obtaining through your Canadian Societies a worthy representation of the fruit cultivated in that country.

I have the honour to be, Sir,

Your most obedient servant,

ANDREW MURRAY.

PRIZE LIST FOR THE GREAT INTERNATIONAL SHOW OF FRUIT, GOURDS, ROOTS, VEGETABLES, AND CEREALS, AT THE ROYAL HORTICULTURAL SOCIETY'S GARDENS, SOUTH KENSINGTON, LONDON, ENGLAND. OPEN TO ALL THE WORLD. WEDNESDAY, THURSDAY, & FRIDAY, OCTOBER 8th 9th & 10th. GOURDS, ROOTS, AND CEREALS WILL REMAIN ON EXHIBITION UNTIL OCT. 18th.

*Special Regulations.*

I. Exhibitors must give at least five clear days' notice, *in writing*, to the Superintendent, of the subjects they intend to exhibit, and the area in square feet of table-room required, and all roots must be sent washed and ready for exhibition. No application will be attended to after FRIDAY, THE 3rd OF OCTOBER.

II. All specimens of Roots must be delivered at the Gardens not later than Monday, the 6th of October, and, if sent, the carriage must be prepaid.

III. No Fruit or Garden Vegetables will be admitted after 8-30 on the morning of October 8th, and all arrangements must be completed before 10 a. m.

IV. Cards corresponding with the entries will be furnished to Exhibitors on the morning of the Exhibition at the entrance to the Gardens; and the Exhibitors will be responsible for the proper placing of these cards.

V. All Fruits and Vegetables must have been grown by the Exhibitor, or they will not be eligible to compete for the Prizes, except in Class A and Gourds and Cereals. All subjects exhibited must be correctly named. No Exhibitor can take more than one Prize in the same class.

VI. Tickets of admission will be furnished to the Exhibitors as follows:—

For 12 Subjects and upwards exhibited, 2 passes.  
For 3 Subjects and upwards exhibited, 1 pass.  
No Exhibitor can take more than 6 passes.

VII. The Exhibition of Fruits and perishable Vegetables will close on Friday, the 10th, and of Gourds and other vegetables, on the 18th of October, at 5 p. m., after which all specimens will be given up to their owners.

\* There is need of some caution in using even well rotted manure in planting trees lest they be killed by a surfeit.  
Note by the Sec. F. G. Arso.



## LIST OF PRIZES.

NOTE.—A dish of Apples, Pears, Oranges, Lemons, and the like, 6 fruits of each; but of Plums, 9 fruits.

| FRUITS.                                                                                           |  | 1st Prize | 2nd Prize | 3rd Prize |        |
|---------------------------------------------------------------------------------------------------|--|-----------|-----------|-----------|--------|
| CLASS.                                                                                            |  | £ s.      | £ s.      | £ s.      | £ s.   |
| A. Collection of Fruits..( <i>Frutifers only</i> ).....                                           |  | 5 0       | 3 0       | ....      | 8 0    |
| B. Collection of Fruits. Not more than two dishes of any one kind ( <i>Private growers</i> )..... |  | 6 0       | 4 0       | 3 0       | 13 0   |
| K. Pears, dessert, 12 dishes, distinct kinds.....                                                 |  | 4 0       | 3 0       | 2 0       | 9 0    |
| L. Pears, desert, 6 dishes, distinct kinds.....                                                   |  | 3 0       | 2 0       | 1 0       | 6 0    |
| M. Pears, dessert, 3 dishes, ripe fruit, distinct kinds.....                                      |  | 1 10      | 1 0       | 0 10      | 3 0    |
| N. Pears, dessert. Single dish, ripe fruit, any kind.....                                         |  | 1 0       | 0 15      | 0 10      | 2 5    |
| O. Pears, kitchen. Single dish any kind.....                                                      |  | 1 0       | 0 15      | 0 10      | 2 5    |
| P. Pears. Heaviest 5 fruits, dessert.                                                             |  | 1 0       | 0 15      | 0 10      | 2 0    |
| Q. Apples, dessert, 12 dishes distinct kinds.....                                                 |  | 4 0       | 3 0       | 2 0       | 9 0    |
| R. Apples, dissert, 6 dishes distinct kinds.....                                                  |  | 3 0       | 2 0       | 1 0       | 6 0    |
| S. Apples, dessert, 3 dishes ripe fruit, distinct kinds.....                                      |  | 1 10      | 1 0       | 0 10      | 3 0    |
| T. Apples, dessert. Single dish, ripe fruit, any kind.....                                        |  | 1 0       | 0 15      | 0 10      | 2 5    |
| U. Apples, Kitchen, 12 dishes, distinct kinds.....                                                |  | 4 0       | 3 0       | 2 0       | 9 0    |
| V. Apples, kitchen, 6 dishes, distinct kinds.....                                                 |  | 3 0       | 2 0       | 1 0       | 6 0    |
| W. Apples, kitchen, 3 dishes, distinct kinds.....                                                 |  | 1 10      | 1 0       | 0 10      | 3 0    |
| X. Apples, kitchen, single dish.....                                                              |  | 1 0       | 0 15      | 0 10      | 2 5    |
| Y. Apples, kitchen. Heaviest 5.                                                                   |  | 1 0       | 0 15      | 0 10      | 2 5    |
| NOTE.—Fruits specified in the above Classes will be excluded from GG.                             |  |           |           |           |        |
| GG. Miscellaneous.....                                                                            |  | 2 0       | 1 10      | 1 0       | 4 10   |
|                                                                                                   |  |           |           |           | £165 0 |

## Care of Trees in Orchards

There seems to be a diversity of opinions as to whether orchards should or should not be cultivated with other crops. If trees appear weak and unthrifty in growth, the soil should be manured and cultivated until they assume a healthy and free growing appearance. After that, the orchard should be seeded down to grass, not neglecting thereafter, as of the first importance, an annual top-dressing or mulching under each tree.

The borer—keep him out of your orchard by all means! It can be done we think, and among the plans recommended, none seem more judicious than that given by a correspondent of the *Gardener's Monthly*. He has effectually prevented the ravages of this destructive pest by removing the earth from the stem of the tree, so that the bark will harden down on the collar. It is well known that this insect never penetrates at any other point than where the bark, form its contact with the soil, becomes tender. This is doubtless correct, and if so, similar methods could be almost as easily tried, and would per-

haps be more effectual. Among these, putting a bandage round the trees, for two inches below and six above the surface of the ground, is a good one. The bandage can be made of coarse muslin; put on once a year for three or four years, and the operation could be performed with considerable dispatch. Another mode is to cover the trunks of trees at the roots, and for five or six inches upwards with a coating of grafting wax, afterwards putting on the linen bandage if deemed necessary. The cost of thus protecting an orchard of fifty or a hundred trees would be a mere trifle as considered in regard to the benefit to be derived therefrom. It should not be forgotten that any of these plans only keep the borer from the trees after they are applied—they do not destroy those already in the tree; hence the knife and wire must be used in clearing them from their holes previous to putting on the bandages.

Our orchardists sustain a great loss by not giving proper attention to their trees. An annual outlay of five dollars, bestowed upon a small orchard of young trees, in the way of mulching, protection from the borer, &c., will in as many years, bring it into a more productive and better condition than twenty years' time, if allowed to take care of itself.

## Mignonette as a Tree.

Buy a pot of ordinary mignonette. This pot will probably contain a tuft composed of many plants produced from seeds. Pull up all but one; and, as the mignonette is one of the most rustic of plants, which may be treated without any delicacy, the single plant that is left in the middle of the pot, may be rigorously trimmed, leaving only one shoot. This shoot you must attach to a slender stick, of white osier. The extremity of this shoot will put forth a bunch of flower-buds, that must be cut off entirely, leaving not a single bud. The stalk, in consequence of this treatment, will put out a multitude of young shoots, that must be allowed to develop freely until they are about three inches and a half long. Then select out of these, four, six, or eight, according to the strength of the plant, with equal spaces between them. Now, with a slender rod of white osier, or better, with a piece of whale-bone, make a hoop, and attach your shoots to it, supported at the proper height. When they have grown two or three inches longer, and are going to bloom, support them by a second hoop, like the first. Let them bloom, but take off the seed pods before new shoots will appear, just below the places where the flowers were. From among these new shoots, choose the one on each branch, which is in the best situation to replace what you have nipped off. Little by little, the principal stalk, and also the branches, will be-

come woody, and your mignonette will no longer be an herbaceous plant, except at its upper extremities, which will bloom all the year, without interruption. It will be truly a tree-mignonette, living for an indefinite period—for with proper treatment, a tree-mignonette will live twelve to fifteen years.—*Parlor Gardener.*

### The Black Knot.

The knots are now making their appearance on the plum and cherry trees, and require attention. Those who will make a careful examination of the excrescence will be able to find some marks upon them, sometimes crescent shaped, like the curculio mark upon the fruit. By a very careful dissection a minute white speck may be found in the middle of the concave portion of this crescent.—This is an egg of an insect. It is believed that the egg causes this excrescence, and we suppose so, because we know that this egg becomes a grub, and burrows in and feeds upon the substance of this knot. These grubs, if raised to maturity become beetles, so like the curculio that stings the fruit, as not to be distinguished from each other. Still they may be different. There are many different kinds of beetles that look much alike. The pea-bug and the beetle from the worm in the chestnut, both look much like the curculio, but differ greatly in their habits.

When we cut into one of the little balls found growing upon an oak leaf, and find there a full grown perfect fly, and no possible way it could have got there from without, we suppose that the parent of that fly, in some way or other, caused that ball to grow, and that it grew to afford protection and food for her young. This is a natural supposition, and is probably true, although it would be hard to prove. Acting upon such a theory as regards the black knot, we should say cut them off as soon as they appear, and you destroy the embryo insect that would cause similar knots another year.

We have seen both plum and cherry trees about this city, and indeed almost wherever we travel, perfectly deformed with these excrescences, and permitted to stand year after year, mere nurseries for spreading this evil.

Many people carefully cut off these knots early in the spring, and it is well enough to do so even then, as it certainly removes a deformity, but it then avails nothing towards getting rid of the cause.

By careful watching and prompt cutting away during the early part of July, you may keep the enemy under your control, but by neglecting them for a year or two, valuable trees, or even orchards, will become worthless.—*Newark Mercury.*

## Botanical.

### Notes on the Coniferous Plants of Japan.

BY JOHN C. VETCH.

There is probably no country in the world of the same area which produces so great a variety of conifers as the group of islands composing the empire of Japan. From Nagasaki in the south to Hakodadi in the north, conifers are everywhere abundant, and in great variety. Travellers have hitherto been enabled to explore but an exceedingly small portion of these islands, and it seems more than probable that the numerous mountain ridges of the interior produce a great number of entirely new and as yet undiscovered species.

The Japanese are great admirers of all evergreens, and much trouble is taken to cultivate them. The greater portion of the timber used for building and for all ordinary purposes is that of coniferous trees. The annual demand is enormous throughout all parts of the empire, and it is said that landowners are compelled to plant a certain number of forest trees yearly, in order to replenish the stock of the country. Conifers are employed very largely for garden decoration. Clipped hedges of the *Cryptomeria*, *Retinosporas*, *Biotas*, &c., are very general, and scarcely a garden can be met with that does not contain specimens trained and cut into grotesque forms. The main roads which intersect this country are very generally planted on either side with rows of conifers. *Pinus densiflora* and *Massoniana*, *Cryptomeria japonica*, and *Thujaopsis dolabrata* are the most common kinds employed for this purpose. Trees thus planted are very seldom cut down, and consequently they attain a great size, and form specimens of the utmost beauty.

Altogether conifers form the most useful and the most generally employed trees in Japan. Most of the kinds which have been discovered by travellers have now been introduced to European gardens, and there being every prospect of the greater portion proving sufficiently hardy to withstand our severest winters, it is confidently hoped that ere long many of the beautiful species which are at present found in Japan only will be distributed throughout our pleasure-grounds, and flourish as luxuriantly as they do in that country. Subjoined is a list of the principal species which have come under my notice, either in a wild state or cultivated in gardens. The Japanese names for the several species are given as far as can be correctly ascertained.

*Abies Alcockiana*: *Toraonomi*—A noble tree, discovered in September, 1860, during Mr. Alcock's trip to the sacred mountain of Fusi-yama, and named in honour of that gentleman. It grows from 90 to 100 feet in height, at an elevation of 6,000 to 7,000 feet. The timber is



good, and numbers of trees are being constantly felled and sold in the neighboring towns.

*Abies firma: momi*.—One of the finest species found in Japan, and one which will, doubtless, prove hardy in Europe. It is a handsome and remarkably straight growing tree, found at an elevation of 3 000 to 4 000 feet. It grows from 80 to 100 feet in height.

*Abies Itsuga: Itsuga*.—Found growing on Mount Fujiyama at an elevation of 6 500 feet. It grows from 80 to 100 feet in height, and its timber is highly valued by the Japanese.

*Abies Jezoensis: Jesso-Matsu*.—A tree growing some 60 feet in height on the island of Jesso.

*Abies leptolepis: Fusi Matsu*.—Found at an elevation of 8 000 to 8 500 feet on Mount Fusi-yama. It is nearly allied to the common larch, but differs from it in being a more slender tree, and having slightly different cones. It is remarkable as being the tree which grows at the greatest elevation on Mount Fusi-yama. Its greatest height is 40 feet, but on reaching an elevation of 8 500 feet it becomes a stunted bush of  $1\frac{1}{2}$  to 2 feet.

*Abies Microsperma*.—A species hitherto found only in the vicinity of Hakodadi, on the island of Jesso. Very little is known about this tree, as two specimens only were seen, which were some 20 to 30 feet in height. It promises, however, to be one of the handsomest of its genus.

*Abies Veitchii*.—A species found at an elevation of 6 000 to 7 000 feet on Mount Fusi-yama. It forms a beautiful tree from 120 to 150 feet in height, with small and very glaucous cones. The Japanese say that the species is peculiar to this mountain.

*Abies bifida: Saga-nomi*.—A variety distinguished from others growing in this country, by its leaves being divided at the point into two sharp points. It does not grow wild in the districts to which Europeans have access, but is largely cultivated in gardens. The trunk of this tree is remarkably straight, attaining a height of 80 to 100 feet. As a timber tree it is invaluable to the Japanese.

*Cunninghamia sinensis: Liu kin momi*.—Not seen in a wild state, but is commonly planted in gardens, where it forms a graceful tree with drooping branches, from 20 to 25 feet in height. —*Gardeners' Chronicle.*

## Veterinary Department.

(Conducted by A. Smith, V. S.)

From the Country Gentleman and Cultivator.

### Pleuro Pneumonia Epizootica.

MESSRS. EDITORS:—Having observed in several of your latest numbers of the *Country Gentleman*, some statements and enquiries respecting the above disease, which appears to be

still *latent* in the United States, I have much pleasure in submitting the following account of the disease to your readers.

Pleuro-pneumonia in cattle, occurring in the epizootic form, although only known in the United States within the last two or three years,\* is now and has been very prevalent in the old world for many years back. In Scotland, and more particularly amongst the dairy stock of its large towns, it has raged with a threatening virulence and fatality scarcely to be credited, except by those daily coming in contact with it. I may as well state at the commencement, that the following remarks and opinions have been gathered and formed, from practice among the dairy cows in the city of Edinboro', to which class of stock they must chiefly apply, although I would not suppose that there would be any marked difference from the disease, as it appears amongst dairy and stock cattle in the rural districts.

Pleuro pneumonia may be defined to be a specific inflammatory affection of the lungs and serous membranes within the thoracic cavity.—There are many other definitions varying only from each other in several points of minor importance, but to me, the above one which I have given, has always seemed to answer and meet our present knowledge of the disease—more so, when we consider how much of it is still involved in doubt and obscurity.

*Symptoms.*—This disease cannot at all times in its earlier stage, be recognized from other affections of the lungs of an inflammatory character, for even its own first appearances are not always marked by the same symptoms, more particularly the type of the accompanying fever. It has been divided into three distinct stages:

- 1st. The incubative stage.
- 2d. The active inflammatory stage.
- 3d. The hectic or exhaustive.

This partitioning off of the disease is a matter which must be clearly understood, for while I have no doubt but that the two latter stages are characterized by a distinct set of symptoms, during the progress of the disease, I at the same time have never been able, and am of opinion that we cannot detect the exact time when the one stage ends and the other commences. They seem to run into each other without producing any distinct line of demarkation, the symptoms of each often being mixed up in the same case at one and the same time. As for the first or incubative stage, which signifies the period of time elapsing betwixt the first contraction of the disease and its development into the second stage, it is my opinion that it can scarcely ever be recognized—(of course when the active symptoms appear, we may be sure that this stage has

\* We think there is no doubt but that occasional instances of Pleuro-pneumonia occurred in this country some years previous to the date mentioned by our correspondent, several of which have been fully described in former volumes of this paper.—EDS. CO. GENT.

preceded them.) We may from many circumstances have our suspicions aroused, that some one or more among a lot is affected, but as far as I am aware there are no sure symptoms which would enable us to come to a direct conclusion. I know at least that this is the case among the dairy stock in Edinboro'; even their constant attendants rarely remark anything unusual about them, until the disease is considerably advanced, and I have even in some instances, although happily they are rare, known one animal to be in the last stages, before anything like serious attention was paid to her case, so apt are their owners to attribute diminution of the appetite and milk to something trivial.

Amongst the very earliest of the symptoms, there is a disposition to restlessness, the cow moving from off one fore foot and resting her weight on the other alternately, and the urine diminished in quantity and much higher in color with a strong disagreeable odor; in unfavourable cases this condition of the urine remains all through the disease. If on this appearance of the urine, some of it be collected and tested by some competent person, and there be found to be an almost or total absence of the chlorides in it, we would be warranted in suspecting that some inflammatory disease of the lungs existed; our attention would at least be drawn to those organs requiring a careful examination. The urine is generally observed to be unusual like, just a few days before the animal begins to shy her food. They lose their appetite generally gradually at first; if they leave off feeding all at once, which they sometimes do, it is an unfavourable symptom, such cases generally running their course rapidly and fatally, and more especially if the same is observed of the *milk*. The udder at an early stage of this disease is very hot, the teats unusually so, and painful. There is a falling off of the yield of milk, but as I have said above, if it is suddenly suspended we have reason to apprehend the worst. Many cows continue to give milk all through the disease, even although they are not eating much, which is a favourable symptom, indicating a good constitution, and a tendency to an early return to health. The animal now appears dull and listless—back slightly arched and head poked out; the hind legs are brought forward beneath the abdomen. Many attach importance to the animals flinching on being pressed along the spine. This, however, is never a symptom of disease amongst dairy cows, as almost any cow in health will do so. The withers are cold; irregular heat of the extremities and ears, the former usually inclined to be cold; the eyes are unusually bright and injected; there is a knuckling of the hind fetlocks frequently observed in the earliest stages, indicating inflammation of the pericardium and pleural membranes within the chest; rumination is suspended; the forelegs are posed, with the toes inwards and elbows outwards, to assist respiration by affording increased chest room. The

respiration is short and hurried, averaging at first from 30 to 40 acts per minute; pulse at first hard and quick, averaging 76. Both the respiration and pulse, however, quickly change; the former become heavy and oppressed, and accompanied with a characteristic grunt at each expiration; this sound is also produced by pressing the cow over the intercostal spaces, and it indicates the adhesion of the pleural to the inside of the ribs. The pulse, at first hard and quick, changes to a quick weak pulse, with which change we generally have emaciation—the nostrils are expanded with a muco-purulent discharge issuing from them. Cough is generally present, but it is not always a symptom. At first it is dry and husky—latterly becoming short, hacking, and painful. The dung at first is inclined to be dry and hard, and deficient in quantity; as the disease advances it also changes, and we have diarrhoea present; this at an early stage of the complaint in young cows, and when other symptoms are favourable, is said to be a good symptom; but where it comes on later, from the presence of fermented food in the stomach and the impoverished poisoned state of the blood, it is a very bad symptom.

These, the usual prominent and most important symptoms of pleuro-pneumonia, now gradually become more aggravated as debility sets in. This is well marked in the staggering crouching gait, the extreme emaciation, occasional shivering, and weak tremulous pulse. There is now in most cases gaseous distension of the first stomach, and an apparent bulging out of the thoracic walls, the belly tucked up, skin yellowish and adhering closely to the ribs; the surface of the body is cold, she grinds her teeth, and there is a discharge of saliva from the mouth. Along with a distension of the stomach, we have frequent eructations of gas up the oesophagus. This is often present in the early stages, and is a good diagnostic symptom.

Unlike the horse, cows afflicted with this disease will lie down; but this is accounted for by the difference in the anatomy of the parts—the broad flat sternum and a peculiarity on the lower articulation of the ribs, admitting readily of lateral expansion of the chest. If one side is affected, she will lie upon it or towards it, so as to free the other for respiratory purposes; and if both are affected, she will either stand or lie upon the sternum, and occasionally on each side alternately. Auscultation is in this disease a valuable aid in enabling us to form a correct diagnosis, but it can only be practiced by those conversant with the healthy and unhealthy sounds of the chest, or by the scientific Veterinarian—although I know many men, who from long and dearly bought experience, can at once tell an animal afflicted with this disease, merely from the symptoms I have given, and without at all studying the condition of the lungs.

The duration of the pleuro-pneumonia differs much in different cases, according to the age,



breed and constitution of the animal and the state of health immediately preceding its contraction. Young cattle stand the disease well, that is from two to five years old; younger and above that again they have not the same capabilities of resisting it. Cows of a medium size and weight, and well proportioned bone and muscle, such as the Ayrshire, stand well, while on the other hand I have generally observed that poor, ill-conditioned cross-breeds, and large heavy-bodied cattle sink rapidly. The incubative stage is said to extend to the sixth week; at least those who believe in its contagious or infectious character, do not consider their cattle safe until that time has expired; indeed they often show symptoms before that time, counting from the period when they were known to be in the vicinity of diseased stock, often just about the sixth week, but rarely after it, unless from some other cause not recognizable. The active febrile stage rarely lasts over eight days, as the lungs become early hepatized, typhoid fever sets in, and debility, followed by collapse and death varying from a fortnight to a month from the time the cow is first observed ill. Those cases which last out through all the stages generally begin to recover tone and appetite in about two months, and some not as late as till the tenth or eleventh week.

The duration and comparative fatality of the disease is also influenced to a great extent by the amount and situation of the lung tissue involved; thus if both lungs are attacked at once, the case is very bad. At other times, one lung is affected near the centre of it; this also is bad, but not so much so as the other. Sometimes it attacks the lower edges of the lungs, and proceeds upwards and forwards. Such cases often get better, even although the whole lung be utterly useless for respiratory purposes, provided the opposite lung does not become involved, and I have known many cases get better where even both lungs were affected from the first, their lower and posterior edges being chiefly implicated. After much observation I have come to the conclusion that the danger is increased materially as the disease nears and involves the centre and anterior portions of the lungs, and more especially if the investing membrane of the heart become implicated. Also the lung on the right side is the one which is most frequently attacked.

In my next I will follow up this subject, treating of its nature, post mortem appearance and treatment, &c.

R. RUTHERFORD, V.S.

*Late of St. John, N. B*

Edinburgh, Scotland, June, 1862.

### What Horses we Need.

The Agricultural Editor of the Cincinnati *Gazette* is furnishing that paper with a series of articles upon the horse. In regard to the kind

of horses needed in the United States, he says:

The United States is pre eminent for its trotters. But there is no breed of trotters except the Morgans, and the many names which have signalized the trotting courses belong to the common stock of the country. They are accidental trotters, and their qualities developed by superior training. The moral sentiment of the people is so hostile to the gambling of the race course, that running became unpopular. The carriage and buggy having taken the place of riding on horseback, trotting was a useful gait, and trotting races have been tolerated on account of it. Hence our sports of the turf are shown in these, and the training skill of sportsmen directed on trotting horses. We need skilful breeders to establish a trotting stock. It is true that the Morgans have much to claim our admiration. For general usefulness they have no superiors. Their fast gaits, medium size, endurance and excellent disposition, point them out as the best for family purposes. But still, the more showy carriage horse, such as Consternation, Messenger, Hamiltonian, Highlanders, etc., will often command a more ready sale, and the breeding of these should command greater attention than they do. Our fault is too much mixing and it is too habitually setting at defiance the adaptation of the points of the mare and stallion to each other. This evil is facilitated by the numerous classes of horses that are here. Our importations embrace every valuable kind for every valuable purpose, and their numerous crosses on the common stock have given a diversity of forms and blood that make breeding for especial purposes, such as for the carriage and buggy, no easy matter. The forms and blood of stallions generally have so little to do with each other, that a Highlander begets a Diomedé colt, and a Morgan shows an undersized offspring without the qualities which are characteristic of the breed. Even good diverse qualities neutralize each other, and the progeny exhibits either none of the qualities of the parents, or so much modified as to be of little value.

For farming purposes, heavy horses are not needed. A fast walk in the plow is the most useful gait, for experiments show that the draft of the plow is not increased by speed; hence it may be run at the same depth at three miles an hour, as at two miles, without any additional strength from the horse. A horse therefore, that will walk three miles an hour in the plow is worth a third more than one that walks but two.

A farmer, too, wants a horse that will trot his buggy eight miles an hour; and fast walking and trotting, with endurance, easy keep and kind disposition, are the qualities that all want. A slow, poking plow horse is not desirable for any purpose, save when the farmer is in new ground with the plow, and oxen are better there. Our general breeding should look to the higher qualities—to fast gaits, gentle disposition, nervous energy and *intelligence*; for there is as great dif-

ference in the minds of horses as in the human race.

The two-horse Yankee wagon has superseded the four-horse wagon, because a quick trip to town, with thirty bushels of wheat drawn by two horses, is much better than a slow one of fifty bushels with four horses; and speed, now-a-days is desirable, even of a Sunday, when the wagon conveys the family to church. This is a fast age in all things, and the slow, poking, dull, stupid horse is wanted nowhere.

That Government will need many more horses than it has in past times, is pretty certain. For cavalry, the good qualities I have particularized, are demanded. Whether to reconnoitre or to cover a retreat, or to pursue a retreating enemy, or surprise guerilla parties—for all the purposes of war, a heavy cavalry horse is not wanted. Greater strength is needed for the artillery service, but even here speed, too, is demanded, and the large showy fast trotting horse of the carriage, is more desirable than the slower draft stock.

Even in the dray a good walk is important, although weight of body is absolutely necessary to resist by its momentum the jarring arising from the uneven surface of city payments.

### Choice of Animals for Fattening.

Mr. Hedley contributes the following valuable hints on fattening cattle to the Newcastle Club, and which we find published in the *Agricultural Gazette*, England. He says:

"In my close identification with fat cattle for several years, I have always found that the best animals have the most massive heads, most capacious chests, and the strongest spines. I have, therefore, evolved a few rules to go by in the purchase of lean ones, and scarcely with one exception I have found them to be applicable. The head of any of our bovine races ought to have the first consideration; this is the true index to the vital acumen, and even bodily construction, and will be found to foreshadow all good or bad that may be accomplished. Thus an animal possessed of a broad, full, spacious skull, with strong evenly-bent, defective horns, will be found to have a thick neck at the base, wide thorax, and strong, nervous system; while one with long, narrow, contracted skull, and puny, abruptly-bent horns, will be characterized by weakness, wildness, and slowness to fatten. A small, dull, sunken eye betokens hardness of touch and inaptitude to fatten; and a bright, large, open, eye, *vice versa*. A staring, dark, fiery eye often accompanies a small forehead and hereditary wildness, and when combined with small, drooping horns, and a chin with no loose skin hanging from it, is a very depicable animal indeed, weak in constitution, predisposed to lung disease, and sterile in fattening propensities.—Animals with weakly formed heads have always small loins, and the width of these parts will

always be found in an exact ratio with the strength of the head. The nose, instead of being long and fine, as Virgil, Aristotle, and several other naturalists recommend it, ought in my opinion, to be thick, strong, and near the ear as possible, if only in proportion to the size of the frame. Thickness of nose and thickness of chest are often twins, and so are thin, meager, irregular noses and consumption. Small, snipy noses oft sniff the air into frames of small capacities, and are joined to mouths that can crop but very small morsels at a time. These observations I have found to be applicable to any of the kinds of cattle shown at Newcastle market. But besides the shapes of animals, the age and class must always have especial consideration, and be adapted according to food and situation; otherwise, the realization of remunerative profit will be uncertain."

### Miscellaneous.

**IMPORTANCE OF SLEEP.**—One most effectual method of promoting the health of children is to allow them a sufficiency of "Nature's sweet restorer, balmy sleep." Till they are six or seven years old, they daily require from ten to twelve hours' sleep, particularly if they have ample outdoor exercise; as they grow older, the quantity may be gradually diminished. Children ought to rise early, say by six in Summer and by seven or half past seven in Winter; consequently, they ought to go to bed, when young, by six or seven o'clock; when they require less sleep, they may sit up longer with safety; but there are few habits more injurious to children than sitting up to a late hour. If children sleep soundly, they are generally awake at the proper time in good humour, and will often rouse their parents from slumber by their cheerful prattle or simple song. To secure sound sleep for them, it is necessary that their beds be not too soft; a hair or chaff mattress being certainly the best. The head should be so far raised by the bolster as to be on a line with the spine, so as to preserve a free circulation in the blood-vessels going to and from the head. They should not be over-loaded with clothing; but during the first three or four winters of their lives they need the warmth which can only be obtained by sleeping in blankets, especially if they sleep alone; and in most cases this is very desirable. Till a child is able to get out of bed himself, he should sleep in a room with some one whose watchfulness can be depended upon. Children should always be not only permitted, but encouraged, to rise as soon as they awake; indeed, when they are old enough to rise without help, they should, if needful, be stimulated by reward to get up immediately on awaking. Such a habit, formed in childhood, and persevered in through life, may avert much physical and moral injury. To this end care should be taken that every needful comfort be



provided for them by the time they rise; if they have not to wait to be dressed, or to shiver for want of fire, and if they be not restricted in their play for fear of rousing the adults of the family, they will not wish to lie in bed when they have had sufficient sleep. There is not a more delightful sound to a mother's ears than the joyous laughter of her little ones in the early morning; it speaks of health and happiness, and of that freedom from care which only childhood can enjoy. If children be fretful in a morning we may be sure either that they are poorly, or that their wants are not properly attended to. By making the morning hours pleasant, you render the habit of early-rising easy of acquisition; and when we consider the effect which such a habit will have on the physical, intellectual, and moral powers of our children through life, we cannot too strenuously exert ourselves in assisting them to establish it. The impressions first made on the mind in the morning generally continue through the day, and give a colour to every event which occurs. It is therefore of great importance that children should be spoken to with kindness and cheerfulness when they first awake; and if mothers cannot themselves attend to them, they ought to impress on the minds of nurses how much trouble they may save themselves, and how much happiness they may impart to their young charge, by getting them into a cheerful happy temper as soon as they arise.—*Mother's Practical Guide.*

**THE PERMANENCE OF SPECIES**—The mind shrinks from contemplating the confusion which must ensue, if the ideas which some entertain as to "transmutations" between species, either in the vegetable or animal world, had any foundation in reality.

In that most instructive series of articles which the learned AGASSIZ is now contributing to the *Atlantic Monthly*, we have not known whether to admire more the clearness and simplicity of his language, or the interest with which he has thus far been enabled to surround subjects of a quite recondite nature. He began with the lowest types of animal life, and has now reached the Polyp Coral—the tiny builder of so many reefs and islands which now support the exuberant vegetation of the tropics and withstand all the power of the waves.

Of these Coral Polyps it appears that there are no less than five species. As to the length of time during which they have been at work we make the following extract, referring to the coral reefs on the Florida Coast:—

Estimating the growth of the Coral Reef according to these and other data of the same character, it should be about half a foot in a century; and a careful comparison which I have made of the condition of the Reef as recorded in an English survey made about a century ago with its present state would justify this conclusion. But allowing a wide margin for inaccuracy

of observation or for any circumstances that might accelerate the growth, and leaving out of consideration the decay of the soft parts and the comminution of the brittle ones, which would subtract so largely from the actual rate of growth, let us double this estimate and call the average increase a foot for every century. In so doing, we are no doubt greatly overrating the rapidity of the progress, and our calculation of the period that must have elapsed in the formation of the Reef will be far within the truth.

The outer Reef, still incomplete, as I have stated, and therefore of course somewhat lower than the inner one, measures about seventy feet in height. Allowing a foot growth for every century, not less than seven thousand years must have elapsed since this Reef began to grow. Some miles nearer the main-land are the Keys, or the inner Reef; and though this must have been longer in the process of formation than the outer one, since its growth is completed, and nearly the whole extent of its surface is transformed into islands, with here and there a narrow break separating them, yet in order to keep fully within the evidence of facts, I will allow only seven thousand years for the formation of this Reef also, making fourteen thousand for the two.

This brings us to the shore-bluffs, consisting simply of another Reef exactly like those already described, except that the lapse of time has united it to the main-land by the complete filling up and consolidation of the channel which once divided it from the extremity of the peninsula, as a channel now separates the Keys from the shore-bluffs, and the outer Reef, again, from the Keys. These three concentric Reefs, then, the outer Reef, the Keys, and the shore-bluffs, if we measure the growth of the two latter on the same low estimate by which I have calculated the rate of progress of the former, cannot have reached their present condition in less than twenty thousand years. Their growth must have been successive, since, as we have seen, all Corals need the fresh action of the open sea upon them, and if either of the outer Reefs had begun to grow before the completion of the inner one, it would have effectually checked the growth of the latter. The absence of an incipient Reef outside of the outer Reef, shows these conclusions to be well founded. The islands capping these three do not exceed in height the level to which the fragments accumulated upon their summits may have been thrown by the heaviest storms. The highest hills of this part of Florida are not over ten or twelve above the level of the sea, and yet the luxuriant vegetation with which they are covered gives them an imposing appearance.

But this is not the end of the story. Travel ling inland from the shore-bluffs, we cross a low flat expanse of land, the Indian hunting ground, which brings us to a row of elevations called

the hummocks. This hunting ground or Everglade as it is so called, is an old channel, changed first to mud-flats and then to dry land by the same kind of accumulation that is filling up the present channels, and the row of hummocks is but an old Coral Reef with the Keys or islands of past days upon its summit. Seven such Reefs and channels of former times have already been traced between the shore-bluffs and Lake Okeechobee, adding some fifty thousand years to our previous estimate. Indeed, upon the lowest calculation, based upon the facts thus far ascertained as to their growth, we cannot suppose that less than seventy thousand years have elapsed since the Coral Reefs already known to exist in Florida began to grow. When we remember that this is but a small portion of the peninsula, and that, though we have not yet any accurate information as to the nature of its interior, yet the facts already ascertained in the northern part of this State, formed like its Southern extremity of Coral growth, justify the inference that the whole of the peninsula is formed of successive concentric Reefs, we must believe that hundreds of thousands of years have elapsed since its formation began. Leaving aside, however, all that part of its history which is not susceptible of positive demonstration in the present state of our knowledge, I will limit my results to the evidence of facts already within our possession; and these give us as the lowest possible estimate a period of seventy thousand years for the formation of that part of the peninsula which extends south of Lake Okeechobee to the present outer Reef.

Here we have an unequalled opportunity of judging as to the Permanence of Species. Shall we find that in these insignificant forms of life, there is any evidence of change, disorder or transmutation? Shall we find any symptoms of "progressive development," or "selection,"—any proof that the laws which separate, "each after its kind," every seed that renews and multiplies the successive generations of the living, are not just as binding at this day as ever before—were not just as binding "in the beginning," as they are now? Let Agassiz answer:

So much for the duration of the Reefs themselves. What, now, do they tell us of the permanence of the Species by which they are formed? In these seventy thousand years has there been any change in the Corals living in the Gulf of Mexico? I answer most emphatically, No. *Astræans*, *Porites*, *Mæandrinæ*, and *Madrepores* were represented by exactly the same Species seventy thousand years ago as they are now. Were we to classify the Florida Corals from the Reefs of the interior, the result would correspond exactly to a classification founded upon the living Corals of the outer Reef to-day: \* \* \* Every Species, in short, that lives upon the present Reef is found in the more ancient ones. They all belong to our geological period, and we cannot, upon the evidence before

us, estimate its duration at less than seventy thousand years, during which no evidence of any change in Species, but on the contrary the strongest proof of the absolute permanence of those Species whose past history we have been able to trace.—*Country Gentleman*.

**SAGACITY OF A DOG.**—A short time ago a dog, well known to the railway officials from his frequent travelling with his master, 'presented himself' at one of the stations on the Fleetwood, Preston, and Longridge line. After looking round for some length of time amongst the passengers and in the carriages, just as the train was about to start he leaped into one of the compartments of a carriage, and laid himself down under the seat. Arriving at Longridge, he took another survey of the passengers, and, after waiting until the station had been cleared, he went into the Railway Station Hotel, searched all the places on the ground floor, then went and made a tour of inspection over the adjoining grounds; but being apparently unsuccessful, trotted back to the train, and took his old position just as it moved off. On reaching the station from which he had first started, he again looked around as before, and took his departure. It seems that he now proceeded to the General Railway Station at Preston, and after repeating the looking around performance, placed himself under one of the seats in a train which he had singled out of the many that are constantly popping in and out, and in due time arrived in Liverpool. He now visited a few places where he had been with his master, of whom, as it afterwards appeared, he was in search. Of his adventures in Liverpool little is known; but he remained all night, and visited Preston again early next morning. Still not finding his missing master, he for the fourth time "took the train"—this time, however, to Lancaster and Carlisle, at which latter place the sagacity and faithfulness of the animal, as well as the perseverance and tact he displayed in prosecuting his search, were rewarded by finding his master.—*Recollections of a Sportsman*. By Lord W. Lennox.

---

## Editorial Notices, &c.

---

### The Provincial Exhibition.

---

We beg leave to direct the attention of our readers to the advertisement which appears in another place as to the days for making the entries of articles in the various classes for the approaching Provincial Exhibition. Attention to these dates is absolutely necessary. We have every reason to anticipate that the Exhibition this autumn will be one of the most, if



not altogether the most successful which has yet taken place, and we trust that each one of our readers will do his utmost towards realizing that expectation. The grounds have been enlarged, and the buildings put up for the accommodation of the cattle and horses are ample and substantial. There has unfortunately been a mistake made in the placing of some of them, they being too low in reference to the level of the surrounding ground, but this will be remedied as far as possible before the exhibition takes place. For such portions of the Exhibition as are not provided with permanent buildings temporary structures of a sufficiently substantial character will be put up, and altogether the accommodations will be more extensive and complete than on any former occasion.

### The Board of Agriculture.

The Office of the Board of Agriculture has now been removed to its permanent location in the new Agricultural Hall, corner of Yonge and Queen Streets, Toronto, where all business of the Board and of the association will henceforth be transacted, except during the week of the Exhibition. During the exhibition week the business offices will, of course, be at the Show Grounds.

### THE PROVINCIAL EXHIBITION

OF THE

#### AGRICULTURAL ASSOCIATION OF UPPER CANADA,

**W**ILL be held at the City of Toronto on the 23rd, 24th, 25th, and 26th September next.

Persons intending to exhibit will please take notice that the entries of articles in the respective classes must be made on or before the undermentioned dates:—

Horses, Cattle, Sheep, Swine, Poultry, on or before Saturday, August 16th.

Grain, Field Roots, and other Farm Products, Agricultural Implements, Machinery, Manufactures generally, Saturday, August 30th.

Horticultural Products, Ladies' Work, the Fine Arts, &c., Saturday, September 13th.

Prize Lists and Blank Forms for making the entries upon may be had of the Secretaries of all Agricultural Societies and Mechanics' Institutes throughout the Province.

HUGH C. THOMSON,

*Secretary Board of Agriculture.*

Toronto, August 1, 1862.

### THOROUGH-BRED STOCK FOR SALE.

**T**HE Subscriber has for sale DURHAM and GALLOWAY CATTLE, LEICESTER, COTSWOLD, and LINCOLNSHIRE SHEEP, Male and Female. 10 Durham and Galloway Bull Calves—price from \$100 to \$200; 20 Shearling Rams, weighing from 230 to 285 lbs. each—Price from \$5, to \$100 each.

JOHN SNELL,  
*Edmonton P.O., C. W.*

Four miles from Brampton Station G.T.R.

### EAST RIDING YORK

#### Agricultural Society Fall Show,

**A**T WELLINGTON HOTEL GROUNDS, MARKHAM VILLAGE, 9th October, 1862.

All Entries to be made by the evening of the 8th, or to be peremptorily excluded.

A. BARKER,  
*Secretary.*

### THOROUGH BRED STOCK FOR SALE.

**T**HE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

### TO BE SOLD BY AUCTION,

*On Thursday, Oct. 16, 1862,*

**T**HE well-known Herd of NORTH DEVON CATTLE, consisting of more than forty head of Cows, Bulls, and Heifers; one hundred and seventy West and Southdown Ewes and Rams; pure blooded Essex Pigs, in pairs fit for breeding.

Catalogues of description, with pedigrees, may be had fourteen days before the sale, on application at the office of the *Galt Reporter*, if by letter, prepaid. Credit of 12 months may be had on approved endorsed paper.

### THE SPLENDID FARM,

Consisting of upwards of THREE HUNDRED ACRES, to be sold by private bargain, on accommodative terms.

DANIEL TYE.

County Waterloo, Wilmot, August 1862. td

### FOR SALE.

**A** LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,

Dover Court.

Toronto, Aug., 1861.

## VETERINARY SURGEON.

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

## IMPROVED BERKSHIRE PIGS

**F**OR SALE by Mr. Denison, Dover Court, Toronto.

Toronto, April, 1862.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

## Contents of this Number.

|                                                         | PAGE. |
|---------------------------------------------------------|-------|
| The International Exhibition.....                       | 449   |
| AGRICULTURAL INTELLIGENCE:                              |       |
| Agricultural Exhibitions this autumn....                | 451   |
| Meeting of the Board of Agriculture ....                | 452   |
| Royal Agricultural Societies' Show in England.....      | 454   |
| Trial of Steam Ploughs and Cultivators, England.....    | 456   |
| International Exhibition.—The Awards..                  | 458   |
| Cultivation of Winter Wheat .....                       | 461   |
| Two-story milking stool .....                           | 462   |
| HORTICULTURAL:                                          |       |
| Toronto Horticultural Society's Exhibition              | 462   |
| Hamilton Horticultural Society's Exhibition .....       | 464   |
| Fruit Growers' Association of Upper Canada .....        | 465   |
| Royal Horticultural Society's Fruit Show, England ..... | 470   |
| Care of Trees in Orchards .....                         | 471   |
| Mignonette as a Tree.....                               | 471   |
| The Black Knot .....                                    | 472   |
| BOTANICAL:                                              |       |
| Notes on the Coniferous Plants in Japan.                | 472   |
| VETERINARY DEPARTMENT:                                  |       |
| Pleuro Pneumonia Epizootica .....                       | 473   |
| What horses we need.....                                | 475   |
| Choice of Animals for fattening.....                    | 476   |
| MISCELLANEOUS:                                          |       |
| Importance of Sleep.....                                | 475   |
| The permanence of Spices.....                           | 477   |
| Sagacity of a Dog.....                                  | 478   |
| EDITORIAL NOTICES, &c.....                              | 479   |

## A Thorough Bred 2 Year Old

## AYRSHIRE BULL

**F**OR SALE, by Mr. Denison, Dover Court, Toronto. April, 1862.

## FOR SALE.

**A** LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
Canadian Agriculturist.

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, AUGUST 16, 1862.

No. 16.

The International Exhibition.

VIEWS OF FARMING IN THE NORTH OF ENGLAND  
AND SCOTLAND, &c.

LONDON, England, July 11, 1862.

EDITORS OF THE CANADIAN AGRICULTURIST.—  
This day's proceedings included the winding up of the duties of the Jurors in a ceremony of a somewhat imposing nature, as you will see by the papers in which the proceedings are reported. I had a position in the procession as one of the Jurors. The whole occupied about three hours, and was pronounced by many to be quite as imposing as the opening ceremony. As far as variety of costume and splendid music were concerned it was quite a success, especially as the day was fine, quite an exception to the general rule in that respect. Since I have been in England there have been very few days that it has not rained less or more. My duties now being at an end here, I leave to-morrow for Sheffield.

12th. Passing by railroad from London to Sheffield, I took a different route from that I travelled in 1851, and passed through a very fine Agricultural country. The crops, particularly of wheat, looked only middling, the spring crops better, and the extensive fields of root crops are very interesting, the turnips in some cases being ready for thinning and in others just coming up. The mangels and potatoes look well, but I did not see an acre of Belgian carrots. They appear not to be cultivated here. Arrived at Sheffield, I remained until Monday morning, and left by an early train for York, where we remained for some time in order to view the Cathedral, which in my humble opinion is the grandest I have seen in England. I had not seen it before, but I think it even finer than St. Pauls. Sheffield has grown very much since I last saw it; the population has increased 50,000 in ten

years and it is a prettily situated place, lying in the storm of a basin, and extending up the finely sloping banks in every direction. For an inland place it is not easy to find a more beautiful place than Sheffield when not obscured by smoke of the furnaces. It is a very busy place, and makes an excellent display of its industrial products at the great exhibition. The varieties of articles in their collection are numerous, and many of them are of rich character, as well as useful. The country for two thirds of the way from Sheffield to York presented a very pleasing aspect, beautifully diversified with hill and dale, until coming near York, when it has rather a flat appearance. On leaving for Berwick on Tweed the same remark applies for some distance, when it again assumes the beautiful undulating surface that is pleasing to the eye, especially when the slopes are covered with luxuriant crops of grain, and well cultivated turnip fields.

Arrived at Berwick we found we were too late for the train that stopped at Ayton, and had to stay until Tuesday morning, when we took the early train for Ayton station, and after breakfast were driven a distance of four miles to Mr. Heriot's (related to Dr. Small, of Toronto.) This is an exceedingly delightful drive over a very fertile tract of land, lying in sight of the sea coast. At Mr. Heriot's we were most hospitably entertained, and had a most interesting ramble about the fields, the crops upon which, including wheat, are as fine as I ever saw. The Messrs. Heriot, father and son, are well entitled to rank amongst first-rate farmers. They are cultivating about 900 acres, besides a range of 600 acres of sheep pasture or moor land at some little distance, which I did not see. They had a good many sheep upon the pasture field on the farm under cultivation. They have very little land from which they take hay on this farm; their horses are fed on oat straw and grain. They have no such thing as naked fallows; the wheat land is prepared by a crop of

beans or turnips. That is the system generally pursued here, and with great advantage, as they are in the habit of sowing winter wheat as late as Christmas, and it then does well. This gives them a long season for feeding off the turnips from the ground before sowing their wheat. Their ploughs are at work nearly all the time. This is one great advantage they have over us in Canada.

On Wednesday we took leave of our kind friends and came to Edinburgh, passing through a tract of finely cultivated country. We arrived in time to go to Holyrood and Calton Hill, the churches, the college, &c., and left in the afternoon for Dunblane, where we staid until Friday morning, when we got into the wrong train and went north for a short distance before discovering our mistake. This caused the loss of a day, as we had to return to Dunblane station, and then take train for Callendar, were too late for the Boat on Lake Katrine, and had to stay at the Trossacks all night. This mistake was not without some compensating advantages, as we had the opportunity while waiting at Dunblane, to see the old Cathedral there, and take a walk round the place, the views about which are delightful, including a fine rapid river. We had also time to climb up the mountain at the Trossacks until we were tired. Saturday morning was very wet, but we went by the first boat up Lake Katrine, and by cars across the hills to Loch Lomond, thence to the head of the Loch, and then down to Glasgow, where we found ourselves one day later than we had intended, and were prevented from getting to our friends at Conaie until Monday. I had written to my worthy friend John Thomson of Mouldy Hill how we were situated, and he met us with his carriage at Gretna, and drove us to his home, a very delightful drive of ten miles. After dinner I went on a tour of inspection over the farm, and the next day our friend drove us up the valley of the Esk to Bonize, past Laugholme, in all a distance of about fourteen miles. This is one of the finest drives in Scotland, and the country is extremely interesting. Several very fine mansions are included in the views. The Holmes, or what we call the Flats, are very fertile, the hills rising to a great height on each side, covered with the finest herbage to the very tops, and dotted over with sheep. These are of the Cheviot breed mostly, though some take a cross from a Leicester Ram when they intend to sell the lambs, as many of the best farmers do, and feed off the ewes, buying fresh ewes every fall. The crops in this part of Scotland, and indeed all over the island of Great Britain, have been very much injured by the extreme wetness of the season. The general opinion is that the wheat crop will be below an average, and in this part the bean crop is very seriously injured, as well as the potatoes, and the turnips have been got in much later than usual. It is said to be the wettest and coldest season they have had for many years. The sportsman will not have their usual shooting, as the young game have been destroyed by the excessive wet and cold.

On Wednesday morning we left for Liverpool via Carisle, passing through some fine tracts of country, and many of the manufacturing towns, in which the chimneys of the manufactories are smokeless, the business being very seriously affected by the scarcity of cotton. The distance to Liverpool, 1.9 miles, was performed in four hours. We arrived here about four o'clock, and embark on board the "Bohemian" to-morrow, bidding good-bye to the shores of glorious Great Britain, Glorious in every sense of the word. May we of Canada long rejoice in the privilege of forming an integral part of the Empire of which she is the head.

Yours, &c,

E. W. THOMSON.

A FEW MAXIMS ABOUT MANURES.—Without manure no good farming is possible. The right way to purchase manures is only by analysis. For practical ignorance cannot be blessed; unless it be pleasant to buy things at double their value, and lose good crops into the bargain. In manuring grass lands "it is the safest and soundest economy to obtain the effect at once, and not by niggardly or piecemeal applications." Manure is the farmers' capital.

### Letter from a Canadian in England.

[We take the liberty of appropriating for our pages the subjoined extract of a private letter addressed to one of the conductors of this journal, by Mr. James Fleming, seedsman and florist of this city, dated London, July 25th, 1862.—Eds.]

I intended writing you a few lines before this, but really there are so many things to attract the attention in this immense city that one's time is wholly taken up by sight seeing. I have enjoyed my trip exceedingly, but as far as *climate* is concerned I prefer Canada. The weather here has been unusually cold and wet since the commencement of spring, and the crops have of course been affected accordingly. There are symptoms now of improvement, and if summer set in, in earnest, the harvest may form not far short of an average. My first impressions on seeing land on the Irish coast were not of the most pleasing kind, the landscape looked damp and black, the cold wet weather had kept back vegetation, and the coast appeared denuded of trees. However, the appearance of the farms and gardens very much improved as I got into the country, most of which is very pretty, and in favorable seasons highly productive.—We landed at Londonderry, a fine old town, surrounded by walls, occupying an important position in Irish history. After breakfast I walked round its walls and took rail for Belfast, which is a fine city, full of activity and commercial life, and which of late years has greatly increased. This is the centre of the



linen trade, and many thousands are employed in its factories. Quite a number of the operatives are unfortunately out of employment, in consequence of the American troubles. I was not fortunate in finding your friend, Professor Hodges, of the Queen's College, at home. The College is an extensive and handsome building, mainly of brick, with stone facings, not equal, however, to the university of Toronto, but based on the same non-denominational principle, and open freely to all. I had time to visit the Botanic Gardens close by, and was highly delighted with this interesting and beautiful retreat. It is mainly supported by subscription; government, I understand, affording little if any aid. Mr. Fergusson, the head gardener or Curator was very obliging, and the arrangements of the grounds and healthy state of the trees and flowers indicate the combination of no ordinary skill and industry. The *Auricularia Implicata* grows finely here, some noble specimens being 16 feet high, of beautiful proportions. Laurels attain to a great size, some fine trees 35 yards in circumference, and 25 feet high. Their red berries and verdant shewing foliage must contrast strikingly and pleasingly with the snows of winter.

From Belfast we proceeded by railway to Dublin, staying a day at an inland town called Dunganon. The country along this route is well cultivated and looks remarkably well. The potatoes, of which there is a large breadth, looked exceedingly promising, and I heard nothing of the disease. Hay and oats were a good crop; the former was being cut, but the difficulty seemed to be to cure it, in consequence of the damp, cloudy weather. Every expedient was tried to dry it; groups of laborers in the fields shaking out the mown grass with their hands. I saw no implements beyond the ordinary rake and fork, but was told that in some places, reaping, mowing, and tedding machines were employed, but which were unpopular with the laborers, who threatened them with destruction.—Dublin is indeed a fine city, favourably situated, and surrounded by a wide and beautiful country, interspersed with the splendid residences of the nobility and gentry. The Phoenix Park, immediately adjoining the city, and comprising 1400 statute acres, is a princely domain, with well arranged walks and drives, and beautifully adorned with magnificent groups of forest trees, and deer are to be seen by thousands. In these fine grounds is the residence of the Lord Lieutenant. My visit to the Royal Botanic Garden at Glasnevin, one of the many beautiful suburbs of Dublin, afforded both instruction and pleasure. The gardens are pretty extensive, with capacious green and hot houses; a new one of large dimensions is now in course of erection. The specimens of rare exotics are numerous and exceedingly fine, while the palms and other tropical plants have attained a great height, and are generally of beautiful proportions. This garden is mainly supported, I believe, by the Government, and the Curator, Mr. Moore, is a gentleman of distinguished attainments in all that relates to practical and orna-

mental gardening.—There is another Botanic Garden, in connection with Trinity College, an old and magnificent institution, arranged for the practical teaching of Botany, general and medical, which appears well adapted to its valuable purposes.

Leaving Dublin I crossed the channel to Holyhead in Wales, and from thence by rail to Chester, passing over the Menai Straits, a narrow arm of the sea dividing Anglesea from Carnarvonshire, through the celebrated tubular Bridge, which is a mean affair indeed compared to the later one at Montreal. This is an interesting ride, the highest mountains of Wales being visible in the distance. Passed the ancient cathedral town of Bangor, near which are most extensive slate quarries, and the residence of Col. Pennant of Penryn Castle, who has a herd of short-horns second perhaps to none in the United Kingdom. The gardens and grounds belonging to this princely residence are proportionately beautiful and extensive. Most of this country is only adapted to hill pasture, for small black cattle and heath sheep, the mutton of which is superb. The valleys are generally wide and beautiful, yielding heavy crops of grass and also of roots and grain; but at present in consequence of the ungenial state of the season, the crops in general look but indifferent.—I had an opportunity of staying part of the day in the fine old city of Chester, and of walking around its walls, which are still, notwithstanding their great antiquity, in a good state of preservation. Every street contains houses or buildings that are rare specimens of the old style, extending back many centuries. The soil around here appears in most places to be very rich,—the pastures appearing peculiarly so. It happened to be one of the market days for the sale of horses, the display of strong, heavy animals was very large; a description by no means generally adapted to Canada. From this to London we passed over, for the most part, a very fine country; the crops were better and forwarder, much of the hay having been secured, but, I was told, in rather indifferent order.—The English mode of hay-making involves a great deal of labor, which is conducted upon system; and it is surprising to a stranger how they succeed so well in making comparatively good hay in seasons like the present.

I remained in London eight days, during which time I was wholly taken up in sight-seeing, of which I can only be said to have made a commencement. I have neither time nor ability to describe any thing fully and must leave the magnificent Exhibition to abler hands. Although the Canadian department is small, and for mere display cuts a poor figure compared with some others, yet we have a number of good things, that attract attention, and have received a full share of medals. The one awarded to myself for a collection of agricultural and horticultural grains and seeds, I duly appreciate.

I afterwards proceeded to France, having a strong desire to see the gardens and horticultural operations in the vicinity of Paris. The

South of England had a beautiful appearance, highly picturesque: consisting of woods and pastures, orchards, hop-gardens, and corn fields, stately mansions, comfortable farm houses and neat cottages, often literally covered with the jessamines, ivy, honeysuckle and rose. In France I found the weather getting better and the crops more forward; in the more immediate vicinity of Paris they looked abundant. The farmers in forward situations were busy with harvest work.—In what little I saw of French agriculture the implements employed were exceedingly primitive and rude; but I am told that great improvement has commenced in these matters, as well as in the breeding of stock in some districts.

Paris is indeed a beautiful city, every thing so clean, and the public buildings and ornamental grounds are extensive and magnificent. I cannot attempt details. I spent a day at Versailles, far too short to afford but the merest glance at the Palace and Royal Gardens. The Parisians have excellent opportunities for relaxation and rational amusement in the city and its environs, which, judging from the vast numbers of people every day crowding the public places, they fully appreciate. The *Jardin des Plantes*, and *Vilmorin's Horticultural Grounds*, are exceedingly interesting and instructive to visitors, displaying great skill and systematic industry.

I shall depart in a few days for Birmingham, Manchester, and Sheffield, and when in the latter place hope to see Chatsworth, and shall afterwards proceed to Scotland. I must now conclude these hasty and very imperfect observations, trusting that I shall pick up information and a number of plants and seeds that may be turned to some good account for Canada, after my return.

### Farming Prospects Northwards

EDITOR OF THE AGRICULTURIST.—DEAR SIR, Having just returned from a trip to the foot of Lake Superior, I can give some opinion of the value of the country I have passed through as a farming country, and although to people who have made the same journey my remarks can have little interest, yet to those who have never seen the country they may be acceptable.

*From Toronto to Barrie* the crops looked exceedingly well, although I had seen and heard many complain that they would be ruined for the want of rain. On this section much of the fall wheat was cut, but still in the field, and on my return day before yesterday all was cut, and some housed. Every farmer that I talked to said much in favor of the fall wheat, especially, and most agreed in thinking the spring grain and roots would be a fair crop.

Looking at the wheat harvest going on I could not but think what a benefactor to this country, especially, was the man who invented reapers. The whole crop of fall wheat within a district can with their assistance be cut and

stacked within one week, without subjecting the Farmer as in old times to the annoyance and delay of cutting with cradles and reaping hooks at extravagant charges.

*From Barrie to Collingwood* the road runs through a most uninteresting country, very wet, and flat, chiefly sand and poor timber. With few exceptions, here I saw no fall wheat, indeed, no farming worth mentioning. I have frequently traveled the road before and each time formed the same impression. Collingwood is much improved, and the long wharf (where two steamers and some vessels are lying) covered with Western and Northern produce, much of it indeed Indian corn Chicago, gives one the idea of a business place, very different from that formed some years ago when visiting the "Hen and Chickens" as it was then called.

*From Collingwood to Owen Sound* the country is very pretty showing some, good looking farms and farm steadings. Here the steamer *Clifton* makes a daily passage each way, where only a few years ago the Indian canoe was the only boat. Owen Sound is becoming quite a town, with every evidence of prosperity about it.

*From Owen Sound to Shebananing* the scenery is very fine. The latter place is a little Indian village, apparently very old, and yet there are not ten acres of cleared land about the whole establishment. Strange to say the post office here is called Killarney, I suppose to please some immigrant or the whim of some traveller. It was originally called by its Indian name, and the post master allowed me to look at the old post office stamps which he has yet, and would be delighted to use again if permission were granted. Few things could display worst taste than the altering of the ancient and aboriginal names of this country; surely as much respect might be paid to the ancient tribes of this beautiful country, as to the wishes of old country people who desire to perpetuate old country names. At all events there are new places every day springing into being, where such names may be indulged in without injuring the feelings of a race not yet extinct, though fast degenerating and disappearing before the vast strides of Canadian civilization.

*From Shebananing to the Sault St. Marie* the country is as beautiful to the eye as it is worthless to the settler for farming or timbering. I must, however, make some exceptions in favor of the Sault, for I saw at the Hon. Col. Prince's, who is the judge of the new district of Algoma, some land as fertile as I ever saw. His peas are eight feet long, and everything else growing with equal luxuriance. The old Colonel or, as he is better known to many "Shot Accordingly" lives in good old English style, extending hospitality with open hands to rich and poor. As a settler he has done more than all the rest put together, as far as I could see. He has built a



good house and out houses, cleared considerable land and introduced a fine lot of good stock, very fine horses, thorough-bred Ayrshires and Galloways in horned cattle, Southdowns, and Leicesters in sheep, and poultry of the most improved kinds in great numbers. Indeed, as a settler his example is well worth following.

The Wellington Miners are doing an extensive business, no doubt at a large profit; but the Bruce Mines appears to be at low water mark and doing very little. In this neighborhood such a think as cultivating the ground is out of the question even for a hill of potatoes, as it is all rock just opposite the mines. St Joseph's Island affords a few people a living by farming, selling their little produce at the mines, which they reach by boats. It is said of forty thousand acres of this island, that about ten thousand is worth farming, but entirely cut off from all communication but by ice and small boats.

At one place where we called, near Garden River, named Sugar Island, we found a cunning Yankee who makes above a thousand dollar, per annum by the manufacture of raspberry jams which he makes from fruit gathered by the Indians, and which comes to him from all directions for miles around. I was told that some years he makes as much as six tons; besides this, he provides wood, milk, &c., for the boats passing up and down. The farmers about the Sault complain bitterly that no means have been taken by the government to establish a grist mill. I was told that some of them would join together and build one if Government would give the water privilege, which is about the finest in the world, and unbounded. This boon I can scarcely believe the Government will withhold if properly applied for.

Yours, &c.,

R. L. DENISON.

Dovercourt, Toronto, Aug. 9th, 1862.

### Galloway and Angus Cattle—The Provincial Exhibition, &c.

EDITOR OF THE CANADIAN AGRICULTURIST.

—SIR—I observe by the prize list that has been issued for the next Provincial Exhibition, that Galloway cattle are classed with Polled Angus cattle, and I confess I am at a loss to see what consistency there is in such an arrangement. They are acknowledged both in Scotland and England to be two different breeds, and are exhibited in separate classes. I have before me a Scottish paper containing a prize list of the Highland Agricultural Society of Scotland, (for 1860) in which prizes are offered for Galloway, and Polled Angus cattle in separate classes.

It would be quite as reasonable to class Durhams and Herefords together, as they are frequently the same colour and both have horns, while in the other case they are generally black and hornless.

It is really discouraging to farmers that have imported Galloways, and others who have paid

high prices for them and proved them to be an excellent and valuable breed, admirably adapted to the severe climate of our country, to find that the Board of Agriculture has disregarded their merits so much as to refuse to give them an equal position with the other breeds.

I might breed from large Durham cows and a Galloway bull and show those of their offspring that were black and hornless, as Galloways. This would not be right, although, in regard to points, grades are sometimes superior to thorough bred animals. But, as I have shown before, the principle is unsound, they are different breeds, and I claim that it is but right that they should be recognized by the society as such, and should receive the same privileges that are given to the other breeds. Another consideration is, that it places the judges in an awkward position, some of them may be prejudiced in favor of one breed and some in favor of the other for men are generally partial to the breed that they have been most accustomed too. This is especially the case with old countrymen. I should like to hear the opinions of other breeders of Galloways on the subject. And I hope that the Directors will give it an earnest consideration, and, if possible, make arrangements for having it changed before the fair.

You are doubtless aware that at the late exhibitions the judges have recommended that a register should be established for the pedigrees of Galloways. This matter ought to be attended to soon. As there is not a great number of them in the country yet, it would not be difficult to trace them back to the imported animals; but if it is neglected they will get scattered through the country, and there will be a danger of grades being passed for pure bred. Another thing that I wish to refer to, is, that at the last fair there were too many judges appointed for stock. Now for sheep there were two sets of judges to each class, and where persons are showing in three classes of sheep and two classes of cattle, it would require twenty men to show one man's stock to advantage. I am aware that a number of animals that were entered and would have taken prizes were not shown at all, simply because in the confusion of the hour it was impossible to get them out. Surely one set of judges is sufficient for one class. Yours &c.,

JOHN SNELL.

Chinguacousy, Aug. 5th, 1862.

[In reference to the foregoing remarks we would observe that Galloway and Angus cattle have been exhibited in the same class at our Provincial Shows frequently, in fact on every occasion on which the two breeds have appeared there together. The class was nominally for Galloways, but Angus cattle were entered along with them, and the two breeds were considered so much alike that no objection was taken. Last year, however, for the first time the A-

gus cattle were objected to, as competing with the Galloway, and as they were not nominally included in the class, they had either to be rejected, or special prizes awarded them. In order to avoid any difficulty of the kind this year, the words in the heading of the class are changed so as to include both breeds. We do not see that any injustice is done the Galloways. The only difference is that the prize list now includes by name cattle that were always before admitted by tacit consent. But if it is desirable to make a distinct class for the Angus cattle, no doubt it may be done in time. The number and sub-division of classes is already very considerable. Formerly there were only three classes for cattle, now there are six. But if a further sub-division is desirable, there is no good reason why it should not be arranged. We think our correspondent is in error in regard to the judges for sheep. We are not aware of there having been two sets of judges for any breed of sheep except Leicesters, and that has been the case with them for several years, on account of the large number entered in the class, which rendered it difficult otherwise to get through the work in time. As to the difficulty of exhibitors being always able to bring out all their different kinds of stock to each set of judges at the proper time, we believe our correspondent is quite right, and we shall be glad to see it remedied. We shall be glad to receive communications on such subjects from exhibitors and others interested, because it is chiefly by having the merits of every arrangement freely discussed, and the existence of defects communicated, that the managers of the exhibition can hope to arrive at a knowledge of what is necessary to ensure a tolerable degree of satisfaction in the work of the details.—  
[Ed.]

### Exportation of Short-Horns from America to England.

The importation of improved animals from England has long been deemed a desideratum among American breeders, and during the last fifty years many accessions have been made to our stock from English breeds. Such has been the attention bestowed upon the improvement of our stock, that we are at length enabled to reciprocate by exporting to England, for the use of English breeders, animals which have been brought to a high point of excellence by some of our distinguished breeders.

It is stated that Mr. Samuel Thorn, of Dutchess county, widely known as one of the most successful breeders of Short-horns in the United States, has made two shipments from his herd, which have resulted very satisfactorily, the animals selling at high prices. Mr. James O. Sheldon, of Geneva, who though entering upon the business at a later day, has nevertheless taken rank among our most celebrated breeders, has sent out several animals. One of these, a two years old bull, was sold to the Hon. Col. Pennant M. P., of Penryn Castle, Bangor, for 600 guineas, or over \$3000! A yearling bull sold for 400 guineas. The Duke of Devonshire purchased another at 400 guineas.

We scarcely know what higher honors could be achieved by American breeders than to be able to compete in England with the best animals bred there, and at prices quite equal to those paid for the choicest stock hitherto brought from the old country.

These facts do not at all prove that our importations of stock from England should cease. On the contrary, we do not doubt that mutual benefits will accrue hereafter from an interchange of this character. It must not, of course be understood that we are prepared to furnish any very large number of animals such as would be sought after by the English breeders; but the fact that we have a few to spare proves the important advance made in this country in the improvement of our farm stock.

### Rocky Mountain Silk Weed.

We gave some particulars relating to this plant in a recent number of the journal, see page 389. We are indebted for the following additional correspondence to the "Annals of the Botanical Society of Canada," published at Kingston.

COMMUNICATION FROM HIS EXCELLENCY LORD MONCK, ON A FIBRE PLANT SUITED TO THE CLIMATE OF CANADA.

I. Letter from Denis Godley, Esq., Secretary to His Excellency Lord Monck, Governor General of Canada, to Professor Lawson, Secretary of the Botanical Society of Canada:

Quebec, May 16, 1862.

Sir,—I am directed by the Governor General to transmit to you herewith a copy of a letter which was addressed to Lord Lyons by Doctor Hart, and which Lord Lyons forwarded to His Excellency.

Some of the seeds of the plant to which Doctor Hart alludes, are also enclosed.

His Excellency thinks it likely that the Botanical Society of Canada, of which you are Secretary, may be interested in this matter, and will cause the seeds to be sown with



a view to testing the value of the plant bearing them.

I have the honour to be, Sir,  
Your obedient Servant,

DENIS GODLEY,  
*Governor's Sec'y.*

GEORGE LAWSON, ESQ.,  
&c., &c., &c.

II. Letter from Frederic W. Hart, M. D.,  
St. Louis, to Lord Lyons.

*St. Louis May, 1st, 1862.*

My Lord,—Feeling that Her Majesty's Government is deeply interested in the cultivation of Cotton in the British Provinces, and having, during a sojourn in the Rocky Mountains these last three years, discovered a plant that excels cotton in length of fibre or staple, firmer in texture, and fine as silk,—I determined to plant a few seeds taken from the wild, and last year found to my satisfaction, that the bulbs or bolls, which in the wild plant are about the size of hens eggs, under culture grew to the size of a turkey or goose egg, and bore twice the quantity of silk that the Mississippi plant bears of cotton.

I gathered four pounds of silk from the plant, and saved a quantity for seed, some of which I herewith forward you.

On my return to the U. S., I was robbed by the Indian Kiowas on the plains. They stole my silk but left my seed.

The silk weed of the Rocky Mountains grows on the creek bottoms, pushes out in June, and ripens in September, October, and November.

It grows about five feet high, wild. It does not branch in the wild state, but it branches under cultivation and bears full and large bolls or pods.

The seed is all on the outside of the silk, and slips off at a touch, leaving the most beautiful silk I ever saw.

It can be cultivated on the St. Lawrence bottoms, Canada, and in Upper Canada, the whole country is suitable for its cultivation, the climate being similar, and even warmer than that of the localities where I discovered the plant.

As an old Cotton Planter of Mississippi, having raised ten crops in Yazoo, in Mississippi, my brands invariably commanding the highest market price, I feel the fullest confidence in recommending this seed for cultivation in the Canadas, and to the attention of Her Majesty's Government.

Should your Lordship require further information on this subject, I shall be happy to continue this correspondence.

I remain, &c.,

(Signed), FREDERIC W. HART, M.D.  
To Lord Lyons, &c.; &c.

III. Letter from Professor Lawson, Secretary of the Botanical Society of Canada, to Denis Godley, Esq., Secretary to His Excellency Lord Monck, Governor General.

KINGSTON, 22nd May, 1862.

SIR,—I had the honor to receive your letter of the 16th May, with accompanying copy of letter addressed to Lord Lyons by Dr. Hart of St. Louis. And I have to request that you will convey to His Excellency Lord Monck, the best thanks of the Members of the Botanical Society for the information which he has done them the honor to communicate, and for the accompanying seeds.

I have also to state, that in accordance with His Excellency's wishes, the seeds have been sown in the Botanic Garden here, with a view to testing the value of the plant as a source of fibre. The crop will be watched with care, and duly reported upon to His Excellency, so soon as the results can be obtained.

In the meantime it may be desirable to indicate briefly the probable character of the plant, and what likelihood there is of its becoming useful.

An examination of the seeds shows Dr. Hart's fibre plant to be an *Asclepias*, of which genus there are many species, inhabiting different parts of the American Continent, all producing a greater or less amount of fibrous material, usually of great beauty and lustre; and fibre-yielding plants of allied genera occur in India and elsewhere.

The beautiful silky material contained in the seed pods of *Asclepiads*, has necessarily attracted attention in this as in other countries, but, as attempts to spin it failed, its use in the arts has hitherto been confined to the stuffing of pillows and beds, and such-like purposes, among the settlers. There is every reason to believe, however, that the silk cotton of our *Asclepiads* may now be economised for spinning purposes, and therefore a greater interest is to be attached to Dr. Hart's plant at the present time than would have been necessary a few years ago.

The results of experiments that have been made in India, and by manufacturers in England, with the silk cotton obtained from an allied plant, the *Calotropis gigantea*, or Mudar Plant of Bengal, (which is essentially an *Asclepias*), offer inducement to attempt the raising of *Asclepias* fibres in Canada. The silk-cotton of the Mudar Plant is now becoming an article of export from India for the manufacture of a light substitute for flannel, and has been employed by Messrs. Thresher & Glenine, of London, for this and other manufactures, as appears from the remarks, of Dr. Alexander Hunter made at a meeting of the Madras Agri-Horticultural Society on 15th

January last. The Mudar material works well with either silk or cotton, and is now known in commerce as Mudar Silk Cotton. There is no reason whatever why the silk-cotton of Dr. Hart's plant, and the silk-cotton of our indigenous Canadian *Asclepiads*, should not prove as applicable to the purposes of the manufacturer as the silk-cotton of India.

It is desirable to observe that the silk-cotton found in the pod of *Asclepias* represents only half its riches as a fibre plant. A beautiful, and apparently very valuable, fibre is also obtained from the stem, which I am inclined to regard as of even greater importance than the silk-cotton itself; it is of quite a different character from that found in the pods, being not cottony nor so glossy, but of much greater strength, resembling in fact not cotton but flax. One of our Canadian species, *Asclepias incarnata*, has been experimentally cultivated with a view to the production of fibre, and the results of the experiments have been given by Judge Logie in the second part of the Botanical Society's Annals, page 87. Specimens of the fibre were exhibited by Mr. Freed, to the Hamilton Association, in 1860, and the Report of Mr. McMiking, a paper manufacturer, is given in Judge Logie's paper, shewing the fibre to be strong, flexible, silky, of a beautiful high color, brilliant lustre, and easily bleached, in fact to good for paper making, but of undoubted utility and value as a fibre. This species is still under experiment in the Botanic Garden here.

The success that has attended the use of the Mudar flax in India, (as well as the Mudar cotton,) seems also to hold out a strong inducement to the use of *Asclepias* flax in this country. The Mudar flax, from its tenacity, is called "Bowstring Hemp" in India, and is one of the strongest fibres known. Dr. Hunter, who has carefully studied the vegetable fibres of India for many years, states that it possesses most of the qualities of flax, and can be worked with the same machinery, as the fibre splits to almost any degree of fineness with the hackle, and bears dressing and beating well. For many years it was employed by the wealthy natives in India for making strong cloths, cambrics and lawns, worn by the Rajahs, and is still employed for making fishing lines, nets, gins, bow-strings and tiger-traps, on account of its strength. It does not rot readily in water, as the resinous milky juice of the plant seems to preserve it.

Other Indian *Asclepiads* likewise yield fibre of great strength, which seems to be partly due to the presence in the plants' juice of an organic product similar in physical properties to caoutchouc or gutta percha.

Judging from the observations and experiments of Dr. Hart, on the Silk Cotton Plant

found by him on the rocky mountains, and from the results of experiments that have been made by others on allied species—on *Asclepias* flax in Canada, and on *Asclepias* cotton and flax in India—it is not unlikely that both *Asclepias* flax and *Asclepias* cotton may ultimately become important materials of export from Canada. The *Asclepiads* grow luxuriantly in a wild state throughout Canada, especially in the western parts, and being strong-growing perennial plants, they are capable of easy cultivation, and would require not a tithe of the field-labour necessary for the growth of common flax.

Permit me further to mention that in addition to the seeds sown in the Botanical Garden, some have also been sent to members of the Botanical Society in other parts of Canada, for trial, and copies of your communication, with Dr. Hart's letter, have been furnished to the members, with a view to enquiry, and to observation and experiment on Dr. Hart's *Asclepias*, as well as on the indigenous species of our country.

I have the honor to be, Sir,

Your most obedient humble servant,

GEORGE LAWSON, Ph D., LL.D.,

Sec. to the Botanical Society of Canada.

DENIS GODLEY, Esq.,

Secretary to His Excellency Lord Mock,  
Governor General of Canada.

*List of samples accompanying the above Letter.*

1. Mudar Silk Cotton, from *Calotropis gigantea*. From Mr. Jaffrey, of the Agri-Horticultural Garden, Madras, India.

2. Canadian Silk Cotton, from *Asclepias Cornuti*. Kingston, C. W.

3. Canadian Silk Cotton—another kind—from *Asclepias incarnata*. Hamilton, C. W. Judge Logie.

4. *Asclepias* Flax—Canadian—in the rough state, unhackled and unbleached, from stem of *Asclepias incarnata*, the same plant which yields Cotton No. 3. Hamilton, C. W. Judge Logie.

*Written for the Canadian Agriculturist.*

**Hints for an Agricultural Report of the Township of Hamilton.**

*Continued from page 424.*

Of root crops the most important is the potato. This crop has become, especially on low heavy damp soils, a very uncertain one, it was first attacked with the still mysterious disease here in 1843, and since then it has never been entirely free from it, though some years it is much more so than others; on the high, dry, and



light soils in the township the potato is grown to some extent for sale, but on all heavy soils only for home use. In nothing is there a greater number of varieties than in the potato, every one almost has their favorite sorts—red, white, and blue kinds have all found advocates; we have found some of the early kinds and early planted to do best, they seem less subject to disease, and get ripe before the Fall rains set in.

The next root of importance is the Swedish turnip; about half as many acres are sown with them as are planted with potatoes; their cultivation has greatly increased. When we first knew the township, we doubt if there was a single acre grown in the whole township, (putting them altogether), now almost every farmer grows less or more of them, some to the extent of ten acres. They are all but indispensable for keeping stock in proper condition during our long cold winters. The fly is the greatest enemy the turnip grower has to contend with. They are sometimes damaged by lice, grasshoppers, and mildew.

The cultivation of both Carrots and Mangold-wurzels are on the increase, and seem to be grown to nearly the same extent; they are rather a more certain crop than the Swedish turnip, seldom attacked by fly, and (especially the carrots) stand our summer droughts better. Of carrots, the orange, red, and white varieties are all grown, but the white is most common, and attains the largest size. Of mangolds, the yellow globe, and long red are the favorite kinds though other varieties are grown. Likewise sugar-beets and parsnips to a small extent. The same may be said of beans, of which it appears there were seven acres grown in the township in 1860.

There is sufficient hay grown for home use, and to supply the towns in the neighborhood. There is little timothy grown for seed, that being mostly purchased by our farmers, but clover seed is grown to some extent, and in favorable seasons does well; we have seen crops of clover seed in all quantities, from seven pounds to upwards of seven bushels per acre, and sold at all prices, from three and a-half to ten dollars per bushel.

So much for our crops. The *weeds* that are most troublesome to us are the Canada thistle, the Charlock, and couch grass which are all prevalent in some parts of the township, and are all hard to extirpate once they have got a foothold.

**Draining.**—Much of the land in the front parts of the township would require thorough draining, and would be greatly improved by it. Several of our farmers have tried it less or more, the materials used in filling, were at first stone or wood or hollow bricks, now, tile is used; it is made in an adjoining township. Mr. J. Wade has drained to some extent, and finds it profitable. Mr. Hume laid about ten thousand tiles last year, besides what drains he had formerly

made. Mr. A. Crawford has sunk nearly three hundred pounds in drains, using first, hollow bricks, and now tiles. Mr. Fowler thoroughly drained one of his fields some time ago, which made a marked improvement on it. Mr. S. Campbell, when in this township, drained extensively, using mostly wood for filling, tiles were not to be had then. Mr. Wm. Roddick, Mr. Alcorn, and many others have drained to some extent, and we believe all who have tried it have found it profitable, and are encouraged to proceed and enlarge their operations; much however, is still needed, indeed *thorough draining* can hardly be said to be fairly begun yet.

**Fences.**—The great majority of our fences are the old, useful, though certainly not elegant worm fences which are general all over the Province, but many are now fencing largely with posts and boards, or post and pickets, and posts and poles; our main roads are mostly lined with such fences, there are likewise some good stone fences in the parts of the township where stones are plentiful.

Thorn hedges have been tried but have not proved very successful. Mr. Geo Roddick, Mr. Carr, Mr. Wade and Mr. John Wallace have all tried the English hawthorn, but none of their hedges are very thriving. Mr. Roddick's is the most thrifty of any we see, and it is hardly a good fence; some seasons the thorn plants are attacked and the leaves eaten up by a caterpillar, at other times by a small slug similar to the slug that sometimes attacks our cherry trees, and sometimes the mice know the bark during winter, thus completely killing them in places, so that we believe there is not yet a thorn hedge in the township that can be called a good fence. A live fence is very desirable, a plant that would for this purpose prove useful and ornamental is much wanted. Would not some of our native thorn if properly trained answer? We think a native plant indispensable. Willow hedges are sometimes tried, and the present year Mr. Wade has planted out a white cedar hedge.

Having thus gone over stock, crops, &c &c., we would note briefly our Implements. On the first acquaintance with the township, the farmer that had a Waggon, Plough, Drag, or pair of Harrows, Fanning-mill, Cradle, Scythe, pitch and dung-fork, and a few hoes and rakes had a complete set of farm implements; now many of them have Reaping, Mowing and Thrashing machines, Clover-cleaners, Seed-drills, straw and root cutters, Cultivators, Horse-hoes, Horse rakes, Rollers, Subsoil-ploughs, and many others, so that the value of farming implements in the township is set down by the late census at nearly ninety thousand dollars, and we think it rather under, than over stated.

It would be interesting to know who first introduced our various improved implements, but as we do not know this, we may briefly state what we have heard on the subject. Of course, on the first settlement of the township

such implements were not needed, nor could be used; it is only after the land has been cleared that many of them could be of any use. Of threshing machines, we have heard that the first travelling one was brought in here from the State of New York, in 1832, and we think there was only one travelling here on the following year, after that they became common, many of our more enterprising farmers procuring them; of course they were inferior to the kinds now in use, being all the old open kind that sent out grain and straw all mixed together. The first of Pitt's separators was brought in by Mr. J. Livingstone, formerly a resident of this township, about 1841 or 42. This kind with various improvements has now mostly superceded the use of all other kinds; they are mostly driven by horse-power, a few by water, and now this season, Mr. Alcorn introduced one driven by a travelling steam engine, it has not been sufficiently tested to prove its superiority over horse-power.

**Reaping Machines.**—The first reaping machine brought into this township (we believe the very first ever brought into the Province) was a Hussey's Reaper, brought for the harvest of 1843, by Mr. Daniel McKeys. It proving successful, a second of the same kind was brought in the following year by Mr. Wade. They both proved good useful machines for that time, but great improvements have been made on them since then. In 1847 several of the McCormick reapers were brought in, but they hardly answered expectations, performing far inferior to Hussey's. The manufacture of reaping machines on a pattern similar to McCormick's was begun by Helm & Son, in Cobourg, about 1848, and their machines were soon spread over the neighbourhood. Since then many different kinds have been tried with more or less success, many of them being made in Port Hope and Newcastle, besides imported ones. The most common here are Hussey's, Manny's, Burrall's, and self-rakers; they have proved a great boon to the farmer, lightening his labour in the most trying season of the year. Mowing-machines were introduced soon after the reapers, numbers having been made both in Cobourg and Port Hope, besides those brought from a distance; of this class there is not so much variety used—Ketchum's patent being the most common though some few other kinds are used.

The revolving Hay-rake was first introduced here about 1840, and proved a very useful labor-saving implement, indeed, we know of none among our various improved implements that saves so much labour at so small a cost, as it; they are now to be found in the hands of almost every farmer, and are used not only for raking stubble, but also to some extent for pulling peas; the kind mostly used is the wooden revolving rake. An iron spring tooth kind was brought in shortly after the wooden ones, but has not been found so useful, and is now seldom used, and if used, only for raking stubble. There is one of "Delano's" Independent Horse rakes used.—

This rake is mounted on wheels, the driver riding on it, and with his foot causing it to drop the hay; it answers very well; but whether it will supercede the revolving horse-rake remains to be seen.

Cultivators of various kinds for using on land that has been ploughed in the Fall, or on summer-fallow, and likewise, drills, cultivators or horse-hoes, for working between the rows of corn and root crops are in general use, many of them being made in the township.

**Michigan Sod and Sub-soil ploughs.**—Sub-soil ploughs, Seed-drills, Rollers, and indeed we may say, almost all improved implements are used in the township. In conclusion, we would notice briefly our Agricultural Societies, forming part of the County of Northumberland. The farmers of this township have always taken a prominent part in the management of the County Society. In looking over the transactions of the first Society ever formed in the county, dating as far back as 1828, we find six or seven names from this township on the committee; and in the present County Society, formed in 1837, our farmers have always taken an active part; it was not till 1847 that a township Agricultural Society was formed. In that year they gave premiums for root crops in the field, (a plan that has ever since been followed) their funds not admitting of a general Show. The Provincial Show being held in Cobourg in 1848, all the funds were that year given to it. The first Show of the Township Society was held at the Court House, on the 31st October, 1849; a show has been held every year since, except in 1856 when the Provincial Exhibition was again held in Cobourg.

Our shows have gradually increased in size and interest, until now there are over 800 entries, and a prize list of upwards of \$500. The Society numbers about 200 members, each of them receives a copy of the *Canadian Agriculturist*, published twice a month. In connection with the Agricultural Society, we would notice the Farmers' Club that was kept up for several years in the township. In looking over the pages of the *Newcastle Farmer* (which, by the way, was published in Cobourg, and edited by a farmer of our township, the late Thos. Page, Esq.,) we find that the first meeting of the Club was held at the Town Hall, Cobourg, on the first Saturday of July, 1846, when the subject of "the preservation and application of manure," was fully discussed. Mr. J. Wade was Chairman, and Mr. W. Creighton, Secretary, to the meeting, and Messrs. H. Ruttan, M. Jellet, Eyre, and Phillips, appear from the Report to have been the chief speakers; though several other meetings of this club were held, we have no further report of their proceedings. After a time this club seems to have fallen through, but it was again revived, or rather a new one started, about 1851, principally through the exertions of Messrs. Hume, Page, and Wade, and this was well kept up for several years, its discussions being mostly



published in the *Cobourg Star*, and frequently copied into the *Canadian Agriculturist* and other papers. Many papers containing a vast amount of valuable information were read before the Club, by Mr. R. Hume, Messrs. Page, J. Wade, P. R. Wright, J. Sutherland, G. Black, and others. We would state that the reports of this club, which were generally acknowledged as correct, were drawn up by a common working farmer,—we mention this for the encouragement of other clubs, who are often deterred from getting out reports of their proceedings from having no reporter.

In observing the various casualties to which our crops are subject, which no knowledge can foresee nor human skill prevent, we are often impressed with the thought, that no class of the community are so daily, so visibly dependent on the hand of God as the cultivators of the soil. A mysterious blight falls upon the potato, the plant withereth; the worm consumes our crops in their early origin; a tiny fly attacks our wheat when just heading out; the rust arrests it when nearly ripe; storms of rain and thunder lay the most promising of our crops low; the promised harvest of our fields droop beneath the corrosive influences of minute agencies; even after the crops are cut, a series of bad weather disappoints the hopes of the year—the just expectations of the farmer. Daily therefore are we conscious of the need of God's superintending care, but while we feel this dependence, still we are encouraged to apply our industry and skill to improve the gifts the beneficence of Providence bestows; and in a most remarkable degree we are enabled to reproduce those gifts—as the promised seed time and harvest never fail—so that as there have ever been, so there will be to the end of time "Seed to sow and bread to eat."

W. R.

Cobourg, June 18th, 1862.

TABLE No. 1.

Premiums awarded to the Township of Hamilton at the Provincial Exhibitions, held at:

|            |      | Classes. |     |     |    |   |        | Total. |
|------------|------|----------|-----|-----|----|---|--------|--------|
|            |      | 1        | 2   | 3   | 4  | 5 | Extra. |        |
| Toronto    | 1846 | 2        | 1   | 2   |    |   |        | 5      |
| Hamilton   | 1847 | 1        | 2   |     |    |   |        | 3      |
| Cobourg    | 1848 | 33       | 30  | 18  | 1  |   | 2      | 84     |
| Kingston   | 1849 | 16       | 3   | 3   |    |   |        | 22     |
| Niagara    | 1850 | 6        | 6   | 4   |    |   |        | 16     |
| Brockville | 1851 | 12       | 15  | 7   |    |   |        | 34     |
| Toronto    | 1852 | 7        | 8   | 7   |    |   |        | 22     |
| Hamilton   | 1853 | 5        | 5   | 2   | 1  |   |        | 13     |
| London     | 1854 | 7        | 3   | 2   |    |   |        | 12     |
| Cobourg    | 1855 | 44       | 36  | 36  | 10 |   | 10     | 136    |
| Kingston   | 1856 | 14       | 14  | 11  | 2  |   | 3      | 44     |
| Brantford  | 1857 | 10       | 9   | 3   | 1  |   |        | 23     |
| Toronto    | 1858 | 6        | 14  | 10  | 3  |   | 6      | 39     |
| Kingston   | 1859 | 13       | 13  | 4   | 4  |   |        | 34     |
| Hamilton   | 1860 | 12       | 3   | 7   | 7  | 1 |        | 30     |
| London     | 1861 | 9        | 3   |     |    |   |        | 12     |
| Total.     |      | 197      | 165 | 116 | 29 | 1 | 22     | 530    |

TABLE No. 2.

Agricultural productions of the Township of Hamilton for 1860, from the census returns of 1861.

|               | No. acres | Total Bushel | Average per acre | Estimated value at per bushel. |             |
|---------------|-----------|--------------|------------------|--------------------------------|-------------|
|               |           |              |                  |                                | Total.      |
| Fall Wheat    | 2107      | 32,831       | 15½              | \$1 20                         | \$39,897 00 |
| Spring Wheat  | 840       | 152,658      | 18½              | 1.00                           | 152,658 00  |
| Barley        | 306       | 7,796        | 26               | 0.60                           | 4,677 60    |
| Rye           | 176       | 2,168        | 12½              | 0.50                           | 1,045 00    |
| Peas          | 4324      | 55,249       | 19½              | 0.55                           | 46,856 95   |
| Oats          | 3078      | 101,093      | 32½              | 0.25                           | 25,273 13   |
| Buckwheat     | 82        | 1,771        | 21½              | 0.35                           | 6,619 85    |
| Indian Corn   | 451       | 11,706       | 26               | 0.50                           | 5,853 00    |
| Potatoes      | 556       | 73,105       | 85               | 0.20                           | 14,421 00   |
| Turnips       | 387       | 146,071      | 377½             | 0.12½                          | 18,258 70   |
| Mangoldwurzel | 47        | 25,891       | 551              | 0.12½                          | 3,236 60    |
| Carrots       |           | 65,874       |                  | 0.12½                          | 8,609 20    |
| Beans         |           | 155          |                  | 0.75                           | 0,116 25    |
| Grass Seed    |           | 219          |                  | 3.00                           | 0,657 00    |
| Hay           | tons      | 4544         |                  | 8.00                           | 36,355 00   |
| Hops          | lbs.      | 432          |                  | 0.25                           | 0,108 00    |
| Flax*         | do        | 14,892       |                  |                                |             |
| Wool          | do        | 28,961       |                  | 0.25                           | 7,240 25    |
| Sugar         | do        | 2,892        |                  | 0.10                           | 0,289 20    |
| Butter        | do        | 159,162      |                  | 0.12½                          | 19,595 25   |
| Cheese        | do        | 32,201       |                  | 0.07                           | 2,254 07    |
| Fulled cloth  | yds       | 1,629        |                  | 1.00                           | 1,629 00    |
| Flannel       | do        | 5,033        |                  | 0.50                           | 2,516 50    |
| Linnen        | do        | 12           |                  | 0.60                           | 0,007 80    |
| Oider         | gal       | 5,256        |                  | 0.10                           | 0,525 60    |
| Beef          | brl       | 995          |                  | 10.00                          | 9,950 00    |
| Pork          | do        | 2,220        |                  | 10.00                          | 22,200 00   |

|                                                                |              |
|----------------------------------------------------------------|--------------|
| Produce of Gardens and Orchard at 10 per cent on the value     | 14,534 00    |
| Estimated value of Horses sold at 10 per cent on the value     | 12,096 10    |
| Estimated value of Live Stock sold at 10 per cent on the value | 26,408 60    |
|                                                                | \$478,064 65 |

There seems to be some mistake about the Flax, as the Flax and Hemp of the whole County are only 17,868 lbs.—We have not estimated its value.

W. R.

TABLE No. 3.

|                                |                  |             |
|--------------------------------|------------------|-------------|
| Horses over 3 year old         | 14.32, valued at | \$120.096   |
| Total value of Live Stock      |                  | 264.086     |
| Total value of farm Implements |                  | 87.274      |
| Total Pleasure Carriages       | 553, valued      | 24.671      |
| Total value of Farms           |                  | 2,254.929   |
| Total                          |                  | \$2,751.036 |

Number of acres under cultivation \$40,891

### The Agricultural Census.

From *Toronto Globe*.

A blue-book has been out for some time, giving for Upper Canada the agricultural statistics collected at the taking of the census in January, 1861. Those collected for Lower Canada are still unpublished. A few of that facts, however, ascertained with reference to that section of the Province, were supplied by Mr. Galt in his budget speech of last session. These we shall repeat, before proceeding to the results of the Agricultural census of Upper Canada, in order that as complete a view as possible may be pre-

sented of the progress in agriculture made by the entire Province. The comparison of course is between the years 1860 and 1851, the figures given to the enumerators as to the average under cultivation, the amount of produce raised, &c., being in each case for the year previous to that in which the census was actually taken.

In Lower Canada, then, according to Mr. Galt, the lands held were 10,223,959 acres in 1860, against 8,113,408 acres in 1851—an increase of 2,110,551 acres, equivalent to more than 20,000 lots of one hundred acres each. The acres under cultivation were 4,678,900 in 1860, against 3,605,167 in 1851—somewhat over a million of acres of previously wild lands having been brought under cultivation during the intervening period of nine years. The cash value of farms in Lower Canada in 1860, was \$168,432,546, and of live stock, \$24,572,124. The bushels of wheat raised were 3,073,943 in 1851, and 2,563,114 in 1860—a decrease of 510,829 bushels. Of other grains, (barley, rye, peas, oats, buckwheat, and Indian corn,) the number of bushels raised was 12,147,070 in 1851, and 23,534,903 in 1860—an increase of 11,387,633 bushels. Of flax, the product in 1860 was 976,495 lbs., against 145,755 lbs. in 1851.

The blue-book to which we have referred, enables us to enter more in detail with regard to the agricultural progress which has been made by Upper Canada. The number of occupiers of lands in Upper Canada was 131,983 in 1860, and 99,906 in 1851—an increase of 32,077, or a little over 32 per cent. This was considerably less than the percentage of the increase of the whole population, which was 46 $\frac{3}{4}$ . It is a singular circumstance that the number of very small landholders diminished considerably between 1851 and 1860. In the former year there were 12,417 occupiers of 20 acres and under, and to the latter year there were but 7,099 of this class. The number who held between 20 and 50 acres was 19,143 in 1851, and 26,630 in 1860; the number who held from 50 to 100 acres increased from 47,427 to 64,891; the number who held from 100 to 200 acres increased from 17,515 to 28,336; and the number who held above 200 acres increased from 3,404 to 5,027. The whole of the lands held in Upper Canada were 13,354,907 acres in 1860, against 9,825,915 in 1851—an increase of 3,528,992 acres, or nearly double the corresponding increase in Lower Canada. The following are the counties in which the greatest increase in the quantities of land held has taken place. In Kent the increase was from 216,422 acres to 315,222; in Lambton, from 167,969 to 291,803; in Victoria, from 160,190 to 292,765; in Simcoe, from 330,103 to 466,694; in Wellington, from 358,949 to 532,671; in Huron, from 284,037 to 632,324, an increase of 348,287 acres; in Grey, from 217,319 to 585,697, an increase of 368,378 acres; and in Bruce from

35,643 to 477,882, an increase of not less than 442,239 acres. The county in which the smallest quantity of land is held is Russell, which has also the smallest population of any county in Upper Canada—its population being 6,824 and its occupied acreage, 72,715. The county in which the largest quantity of land is held is Huron, which has also the largest population of any county in Upper Canada (excepting York)—its population being 51,954, and its occupied acreage 632,324.

A point of greater importance than the increase in the amount of lands held, is the increase of lands brought under cultivation. In this respect Canada West very far outstripped Canada East. The acres under cultivation in Upper Canada in 1851 amounted to 3,702,788; in 1860, they amounted to 6,051,619—an increase of 2,368,831, or 43 $\frac{1}{2}$  per cent. In Lower Canada the increase of lands under cultivation was below 30 per cent. In 1851 the quantity of cultivated land in Upper Canada exceeded the quantity of cultivated land in Lower Canada by only 97,621 acres; in 1860 the excess in favour of Upper Canada was no less than 1,372,719 acres. It will be observed, too, that the work of bringing land under cultivation went on in Upper Canada in a much more rapid ratio than even the increase of population, the proportion being as 63 $\frac{1}{2}$  to 46 $\frac{3}{4}$ —the natural inference from this being that Upper Canada is a more decidedly agricultural country now, in proportion to its population, than it was ten years ago. More than one-half of the total increase of land brought into cultivation is found in the following thirteen counties, which we have arranged in the order to which they are entitled by the amount of industry in felling the forest that has been put forth within their respective limits. In Huron the acreage under cultivation was 54,976 in 1851 and 215,325 in 1860—an increase of 160,349 acres. In Wellington the acreage under cultivation was 119,081 in 1851 and 232,346 in 1860—an increase of 113,265 acres. In Perth, the acreage under cultivation was 58,116 in 1851 and 166,419 in 1860—an increase of 108,303. In Grey, the acreage under cultivation was 30,499 in 1851 and 133,885 in 1860—an increase of 103,386. In Oxford, the increase was 96,826 acres; in Middlesex, 96,725; in Simcoe, 93,120; in Bruce, 86,968; in York, 71,577; in Hastings, 69,032; in Ontario, 61,471; in Lanark, 60,363; and in Welland, 60,064. The following are the five counties in which the increase of cultivated lands was smallest. In Prince Edward, the increase was 29,704; in Lincoln, 26,674; in Halton, 21,713; in Prescott, 21,014; and in Russell, 14,687. In each of the following nine counties the number of acres under cultivation in 1860 exceeded 200,000. In York the cultivated acreage was 292,213; in Middlesex, 233,672; in Wellington, 232,346; in Oxford, 231,058; in Huron, 215,325; in Northum-



berland, 206,900; in Ontario, 205,353; in Durham, 205,107; and in Simcoe, 202,312. In each of the following nine counties the cultivated acreage was under 100,000. In Glengary, it was 99,880; in Lambton, 96,092; in Bruce, 89,230; in Renfrew, 85,461; in Stormont, 80,071; in Essex, 77,105; in Dundas, 76,700; in Prescott, 53,934; and in Russell, 20,712.

Of the 6,051,619 acres under cultivation in Upper Canada, 4,101,902 were under crops, 1,860,848 under pasturage, and 88,869 in gardens and orchards. Of cultivated lands, therefore, in Upper Canada, the average proportion under crop was  $67\frac{3}{4}$  per cent, and that in pasture  $30\frac{3}{4}$  per cent. In 1851, the proportion was  $61\frac{1}{4}$  per cent under crop, and  $36\frac{3}{4}$  per cent in pasture. In 1860, the proportion of lands under crop to the whole quantity under cultivation was highest in the following eight counties: In York the proportion was 80 per cent; in Brant  $79\frac{1}{2}$ ; in Bruce,  $76\frac{1}{2}$ ; in Grey, 76; in Simcoe  $75\frac{1}{2}$ ; in Peel,  $75\frac{1}{2}$ ; in Perth,  $74\frac{1}{2}$ ; and in Welland,  $73\frac{1}{2}$ . The proportion of lands in pasture to the whole quantity under cultivation was highest in the following five counties: In Glengary, it was 41 per cent; in Grenville, 41; in Lanark,  $42\frac{3}{4}$ ; in Elgin,  $44\frac{1}{2}$ ; and in Stormont, 47. The following six counties occupied the first rank, with reference to the attention paid to gardens and orchards. In Hastings, 6,450 acres were occupied in this way; in York, 5,004; in Middlesex, 4,741; in Oxford, 4,639; in Norfolk, 4,387; and in Welland, 3,875. The six counties in which least attention was paid to these matters were Bruce, which had 388 acres occupied with gardens and orchards; Glengary, which had 295; Carleton, which had 285; Prescott, which had 213; Renfrew, which had 104; and Russell, which had but 64 acres so occupied. Column 17 of the abstract gives the quantity of land held by townspeople, not being farmers. This, we suppose, is in addition to the figures already stated, and for the whole of Upper Canada, makes a total of 182,552 acres.

Of the whole 13,354,907 acres held in Upper Canada, upwards of one-half, or 7,303,288 acres, were in 1860 still uncultivated and returned as "wood and wild lands." An examination of the column, showing the location of these lands, owned by private parties, but not yet cultivated, will give some idea of the localities in which the greatest accessions to the present population of Upper Canada will be found, when the next periodical census is taken. The nine counties, in which there are the largest quantities of granted lands still to be cultivated are as follows: In Grey there are 451,812 acres of such lands; in Huron, 416,999; in Bruce, 388,652; in Wellington, 300,325; in Middlesex, 287,681; in Renfrew, 275,186; in Lanark, 265,691; and in Simcoe, 264,382. The counties in which there is now the smallest quantity

of wild lands to be brought under cultivation, are as follows: In Wentworth, there are 85,625 acres; in Welland, 82,428; in Prince Edward, 77,215; in Brant, 75,517; in Halton, 73,518; in Lincoln, 68,451, and in Russell, 52,003.

### Steam Cultivation—The three Systems.

*To the Editor of the Mark Lane Express.*

SIR,—To all interested in steam cultivation—and what farmer is not?—it was a pleasant sight at Farningham to see the land smashed to pieces or laid over in deep even furrows without the treading of a horse's hoof: to see the most perfect cultivation rapidly performed by the sole agency of steam. It was most gratifying to walk from field to field, admiring the skillful adaptations and masterly workmanship displayed by our enterprising English implement makers.

Everyone who visited the trial-fields must have felt that steam cultivation has assumed a much more practical form since last year; and also, to some extent, a more perplexing one. The question no longer lies merely between Fowler's plan and Smith's; other men are in the field, and most of these have a variety in their several systems: so that it is no easy matter, after determining to join the ranks of steam cultivators, to make up the mind in which company to enlist.

That each system represented at Farningham is capable of executing first-rate work will not be doubted by any who examined the land operated upon; but it should be carefully borne in mind, that *the character of the work done depends on the implement rather than on the system*. I name this particularly, because the natural tendency of a farmer's mind is to judge by the results on the land, of which he feels himself perfectly competent to form an opinion.

I consider that the first thing we have to do is, to determine which system is best adapted to our own farm, and then to decide on the most appropriate implements. Let us consider this more particularly.

All the systems which have come prominently forward may be included under one or other of the following heads:

- 1st—Traction System,
- 2nd—Direct System,
- 3rd—Round-about System.

The Traction system, in which the engine traverses precisely the same ground as the implement, was not represented as connected with cultivation; it was—where it ought to be—working, in exceptional cases, on the hard road.

The Direct System, of which Fowler may be regarded as the champion, and in which the engine and anchor travel along opposite headlands, was well represented, and presents many advantages: in economy of power, diminution of wear

in rope, and economy of manual labour ; and, for tolerably level tracts of large open fields, must, I conceive, at present distance all competitors. But farms consisting entirely of large well-arranged open fields are the exception ; and when we consider the irregularities of surface on the majority of farms, the obstacles offered by small enclosures, irregular quality of land, wear and tear in moving machinery, danger of priming, &c., from the frequent variations in the level of the engine boiler, absorption of power in climbing hills, difficulty of traversing soft or boggy land, complexity of the machinery placed in the hands of farm labourers, and last, but not least, the first cost of the apparatus, we shall see that the Direct System, while possessing many advantages, labours in very many farms under insuperable disadvantages. Fowler, in his disc anchor windlass, and ingenious adaptation to the ordinary portable engine, has met some of these objections, by diminishing the cost and the weight. Coleman's mode of working with a pair of implements is included in this system, and exhibits a simple method of avoiding the necessity for a heavy anchorage on the headland opposite to the engine ; but the fact of its requiring a duplicate of all implements, employed is no slight objection, and the absence of any arrangement for coiling the rope, the small size of the drums, and the difficulty in the way of efficient portering must add fearfully to one of the most serious items in steam cultivation,—viz, the wear of the rope ; while the general objections to the Direct System apply to it equally with Fowler's.

The roundabout system, in which a portable engine is stationary and the rope laid round the field, was well represented by Smith, Howard, Fowler, and others, each employing a different kind of windlass, and all, as well as the implements deserving especial attention. For simplicity and general adaption no system can at all compare with this ; the entire apparatus being comparatively inexpensive, and soon understood by a labourer of ordinary intelligence. The engine employed is similar to that used for thrashing, and there are few fields in which it is not easy to find some spot well adapted for placing an engine and windlass, and conveniently accessible for the water-cart ; while in many cases, the expense of water-carting may be avoided, by the formation of a tank or hole to retain or reach the water. The remainder of the apparatus, such as anchors, snatchblocks, &c., is simple, effective, portable, and little liable to get out of order ; add to this the small amount of first outlay required, and the advantages of the roundabout system can hardly fail of having great weight with the practical farmer in making his decision ; but at the same time he must not lose sight of the fact, that, under it, the manual labour is more, and the length of rope exposed to constant wear greater than under the direct system.

In these remarks I have abstained from noticing many details in the several systems, because it has been my aim to avoid all that might tend to lead the mind away from the first great question : " Which of the three general systems is the best for my own farm ? " This being settled, we have advanced one most important step, and it only remains to determine which maker we shall go to, and which of that maker's plans we shall adopt, which questions can only be resolved by each individual for himself, with special reference to his lease, his farm, and his purse. My own farm I cultivate with Howard's apparatus, for which I consider it specially adapted ; but of this I am convinced—that where no obstacles are presented in the shape of a tag end of a lease, annual tenancy, or the incapacity of the farmer, there are, comparatively, few farms in the country, on which one or other of the systems of steam cultivation might not be adopted with very great advantage.

My present object is not so much to consider the novelties in steam cultivation as to urge its general importance, and to rouse farmers from that torpid state in which so many yet remain with reference to it, *especially our heavy clay land men*, whose land, horses, and pockets pray so earnestly for the invaluable adjunct of a steam cultivator.

Before concluding, allow me to draw attention to one important feature in the trials, which gives rise to much misconception in the minds of farmers.

Provided the implement does not penetrate into the hitherto uncultivated "pan," we can, by inspection, form a tolerably near guess as to the power required to move it at a given rate ; and if it does not penetrate below, we know that *each extra inch enormously increases the power required*, especially if we have tried our hand at subsoiling by horse-power. But when we enquire what power is employed, we are so often met by the answer, "Oh, a common 8 (or perhaps 10) horse-power engine;" and if we further enquire the pressure, "About 45lbs." is generally the reply. Perhaps in some cases it is about 45lbs., but how often is it about 70, 80, or 90 lbs., or even more ; and I suppose even balance springs and even registers do not always like to contradict the assertions of their employers.

I have before said that the *quality* of the work done depends on the implement rather than on the system ; but the *quantity* of the work done by any given implement must, to a great extent, depend on the system, and what we want to know is—1st. What power is really exerted by the engine, not merely the nominal horse-power ; 2ndly. How much of that power is absorbed by the intermediate machinery, such as clip-drum, windlass, pulleys, tight and slack rope, &c ; 3rdly. What *effective* pull remains for the implement, be it plough,



cultivator, or any other? This investigation was ably touched upon by your correspondent in the lucid article which appeared in your columns last year, and it is very desirable that it should be gone into most fully. Now the amount of effective pull and speed attained being two things of the utmost importance to be ascertained, and the draught being steady, why not attach a sufficiently powerful dynamometer to the rope in front of the implement, and another behind? Then let the most convenient implement for the purpose be selected, and tried in succession under each system of haulage; this done, let such various implement be attached in succession to the same rope. Surely a few experiments of this nature, conducted by competent men, would materially assist the agricultural world, and simplify the question of steam cultivation: they would exhibit to us where the system was in fault and where the implement, which is just what we want to get at. When prizes are offered, and judges appointed, makers would not hesitate to submit their machinery to this or eal; but individual farmers are not in a position on the trial field to come to a satisfactory conclusion. An engine, whether working at 30lbs. or 90lbs., looks very much the same, while the hanging on of eight or ten additional horses to a machine would strike the most unpractised eye; but we must never forget that whether an engine works at 30lbs. or 90lbs. makes a very material difference to the length of its life. Steam engines are like horses: moderate food and regular work will enable them, like our farm horses, to do a fair amount, and last a good many years: high feeding and harder work will make them break down the sooner, like our London horses. True it often pays better to act on the latter principle, but the farmer must not suffer himself to be deceived by the results achieved by "an ordinary 8 horse power engine." He will also be wise, in purchasing an engine, to bear in mind the purpose for which he intends it, viz., for cultivating as well as thrashing, &c. Engines well adapted for the latter may be ill adapted for the former; but those well adapted for the former will do at least equally well for the latter; hence he should have an eye to the *substantial* character of his engine, and also endeavor to procure the greatest amount of power with the least amount of weight: perhaps he can hardly do better than go to a first class maker, explain his wants, and leave it in his hands to supply them.—I am, Sir, your obedient servant,

W. B.

### The British North American Colonies at the International Exhibition.

(From the *Mark Lane Express*.)

The British North American Colonies have made a noble display of their products at the International Exhibition, and have quite thrown

into the shade the United States. Few persons who have not visited our possessions on the other side of the Atlantic could have given them credit for the skill, enterprise, and ingenuity displayed in the various mechanical contrivances and manufactured articles, of which they have sent specimens. But it is not with these that we would deal on the present occasion. We desire rather to call attention to their agricultural products and capabilities, and shall touch upon those of the Lower Provinces, leaving Canada for subsequent notice. It is the first International competition in which the four Colonies of Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland have taken part.

The province of New Brunswick we have noticed on some former occasions. The Commissioners of the Colony have sent home very fine specimens of its cereals, pulse, maize, flour, and meals, with agricultural implements made and used in the Colony—such as mould-board ploughs, horse rakes, and barrows. There is also a good collection of its timber shown rough and manufactured. The amount of land cultivated in New Brunswick does not yet produce anything like a sufficiency of food for the maintenance of the population. This has not been because agriculture has not been remunerative, but because of the apparently greater inducements held out to the mass of the people by other branches of industry. Lumbering and ship-building, however, are giving place yearly in a greater degree to agriculture. The number of farmers is rapidly on the increase, and a determination seems to have taken hold of every branch of society to leave no efforts untied for the development of this most important—this greatest branch of industry.

In each county of the Province there is an agricultural society—in some counties more than one—and there has lately been established a Provincial Board of Agriculture, for the purpose of watching and protecting the interests of the farmers generally. The annual reports of these societies speak in high terms of the increase that is taking place in the number of farmers; the improvements made in the qualities of crops, and the interest that is being manifested amongst the farmers; and there is every reason to hope that hundreds and thousands of persons will be induced in a few years to enter upon the valuable lands now lying waste, and improve them; thereby enriching themselves and benefiting the country.

The farmers of New Brunswick are all, so to speak, in good circumstances. Many of them are rich, and are now enjoying the fruits of their labour of former years. The majority of them are men who commenced life twenty or thirty years ago with literally nothing. They went into the woods; the first clearing they made was a few yards whereon to build a hut;

that done, their clearing has gone on extending year after year (the hut being replaced by a commodious frame house), until now it counts a goodly number of broad acres, whose fertility enables their owners to live in plenty, oblivious of the trials that surrounded his early life, and rejoicing in the prosperity Providence has bestowed upon him through his own exertions.

Although the soils vary, and one kind of land may be better suited for growing the valuable cereals than another, yet everywhere, except on the barrens or in the swamps, fair crops of these may be raised. But no matter where the farmer settles down, if he is careful, industrious, and persevering, he will meet with an ample return for his labour. If the district in which he resides does not produce wheat as abundantly as he may wish, it will yield a good crop of corn; or failing this; buckwheat may be the most remunerative; if neither of these, it will produce potatoes or turnips, or vegetables of some kind in such quantities as will leave him no cause for complaint. In many places crops of all kinds may be raised to great advantage.

With reference to agriculture, there is one thing that, in justice to the soil of North America, or its climate, or both, should not fail to be mentioned. In no matter what part of the country a piece of land may be situated, or how poor it may be, it is capable by a little labour judiciously disposed, of being brought to a high state of agricultural perfection. As an example, the State of New Hampshire may be cited, justly termed the "Granite State," in consequence of the predominance of granite, which seems to cover its entire surface. Here, upon the solid rock, as it were, are farms that in appearance and productiveness can compare admirably with those of more favored climes. The "hanging gardens" of Eastern Rome are not more marvellous than those apparently bare rocks teeming with vegetable life. This productive power, which the most barren soil in America seems to possess, may be due more to the skill of man than either the causes mentioned above. It is certain, however, if it does not really exist in the soil, it is capable of being introduced into it.

The province of Nova Scotia, which makes its first appearance in European competition this year, has spared no expense whatever in bringing its resources and products before the general public. Its court, looking at the extent and resource of the colony, contains one of the finest colonial collections in the Exhibition Building, every article being well displayed and arranged. The fish, the wood, the minerals, the horticultural produce, the animals, are all beautifully shown, and the great moose standing at the entrance is an indication of its whereabouts. Its gold fields have lately brought the colony into more prominent notice; and with regard to expense in exhibiting, the provincial govern-

ment have given Messrs. Baring Brothers, the official agents of the colony, *carte blanche*.

Nova Scotia is peculiarly adapted for an agricultural country. The best lands are alluvial, or "dyked marsh," and "intervale." The former are formed by the deposit left by rapid tides of the Bay of Fundy, which rises in some places to a height of sixty feet.

The fertility of the "dyked marsh" is, it is believed, quite unparalleled. Some of it, such as the Grand Pre (the scene of Longfellow's "Evangeline"), was reclaimed by the Acadian French about two hundred years ago; and there are instances of this species of land having been cultivated a century without any manure. Up-lands top-dressed with this alluvial deposit may be cultivated for twenty years without any manure. "Intervale" land is formed by the deposit of fresh-water rivers, &c., and is exceedingly productive.

Potatoes in Nova Scotia will yield, on an average, about 230 bushels per acre, and have yielded as much as 450 bushels per acre of a very superior quality. This crop is not so much affected the potato disease as in other countries. 3,284,864 bushels were raised here in 1860. Twenty-two samples are shown by different exhibitors. Wheat, under very inferior cultivation, will yield from 25 to 30 bushels per acre. Specimens sent weigh 62 to 64 lbs. per bushel. The competitors in this department were very few, and the specimens sent are much inferior to those exhibited at the Provincial Exhibition in 1854.

The following is an extract from the official report—

"Every person who has any real knowledge of agriculture, and saw the specimens of grain entered at our exhibition, will readily admit that it was almost all of first-rate quality, and so rarely, if at all, inferior to any equal number of samples either in the mother country or the United States. The *Dumfries Courier* states that 60 lbs. per bushel for wheat, 50 lbs. per bushel for barley, and 40 lbs. per bushel for oats, have generally been considered a kind of standard or medium weight between the heavier and lighter quality; and it mentions, as a specimen of the present crop, that at last week's Haddington market samples of new grain were shown of the following extraordinary weights: Wheat 65 lbs. per bushel, barley 58½ lbs per bushel, and oats 48 lbs per bushel.

"Now the grain at our Exhibit on compares very favourably with this statement, as out of fifty-four parcels of wheat of various kinds, only two were below 60 lbs. per bushel, and to balance this, 16 parcels were above 64 lbs. per bushel, while two parcels were above 66 lbs per bushel. In barley they exceed us in one pound per bushel, our heaviest being only 47 lbs. and 14 ounces per bushel; but we equal them in white oats, as ours is 48 lbs. as well as theirs,



and then they admit it to be an extraordinary weight in Haddington, one of the greatest grain market is the South of Scotland, more especially for oats. Then we have twenty samples of Indian corn, mostly all very excellent, some of it weighing 53½ lbs. per bushel, and twenty-two samples of buckwheat all verging upon, and some of it quite 58 lbs. per bushel."

Barley is a sure and heavy crop; the bald barley will yield about 40 bushels per acre, specimens sent weighing 54 and 56 lbs. per bushel. Indian corn in the western counties prove a most profitable crop, yielding 60 to 65 bushels per acre; specimens sent weighing 60 lbs. per bushel. The climate of Nova Scotia is particularly suited for the growth of buckwheat, specimens sent weighing as much as 56 lbs. per bushel. All kinds of garden and field seeds grow remarkably well in Nova Scotia, producing excellent and profitable returns.

Prince Edward Island shows an interesting collection of its grain, dairy produce, and implements; and these are the most attractive, because, although an agricultural colony of some local notoriety, it is not much heard of here. The climate of the Island is highly favourable to the pursuits of agriculture and the health of the inhabitant. The main difficulty that has stood in the way of its progress and settlement has been the centralization of the land in the hands of absentee proprietors. A short notice of the history of the colonization and the land question difficulties may here be advantageously given.

The allotment of lands in the island was rather lavish—the plan of settlement by grants in August, 1767, being as follows: The island was divided into sixty-seven townships or parts of townships, with certain reservation to individuals having claims upon the Government, and others upon certain conditions of settlement and the payment of quit rents of 2s., 4s., or 6s. annually per hundred acres, commencing five years after the grant, and only half being required the subsequent ten years. The granters were to settle upon each lot one person for every 200 acres, within ten years. If one third of the land in that proportion was not settled in four years, the land was to be forfeited to the Crown. When the ten years had passed however, no attempt had been made to settle 48 out of the 67 townships. Repeated and complicated difficulties arose. Lands were sold for the quit-rents, unoccupied lands were estreated, a composition of quit-rents was attempted. But difficulties continued to exist, even after the reduction in the price of quit rents to 2s. per hundred acres announced in 1817. About ten years after, public improvements were pushed forward with great vigour; roads were widened and improved all over the country, bridges were built, agriculture was encouraged, improved stock was imported, and, to stimulate others, the Governor became a farmer.

In 1828 the Home Government sent out orders to enforce the arrears of quit rent due for five years, and stated to amount to £10,000. The House of Assembly and the colonists generally petitioned the King to relinquish the arrears, and in reply it was stated that the rents might be commuted for £1,000 a-year.

In August, 1861, the then commissioners appointed by Royal mandate to inquire into and adjudicate upon the subjects of dispute in respect to the tenure of lands on this island, brought their labours to a termination. The parties represented in the Commission were the Crown, certain large proprietors of lands on the island, and the tenantry acting through their Government. The claims of each party were minutely and patiently investigated—the grand design of converting on fair and equitable terms the leaseholds of the whole island into freeholds. The Commissioners recommended for this purpose the borrowing of £100,000 by the Local Government, with the guarantee of interest by the Imperial Government. Twenty year's purchase is the maximum price to be paid; but the land is to be valued by arbitrators.

According to the census of 1861, the population of the island was 80,556. The crops of 1860 yielded 346,125 bushels of wheat, 223,195 of barley, 2,218,578 of oats, 50,127 of buckwheat, 2,972,335 of potatoes, 348,784 of turnips, and 31,100 tons of hay. The live stock owned in the island consisted of 18,765 horses, 60,015 neat cattle, 107,242 sheep, and 71,535 hogs. 711,485 lbs. of butter were made in the year, and 109,233 lbs of cheese.

From Newfoundland much was not to be expected in the shape of agricultural produce—the fisheries being its main stay. But that it is not the bleak and inhospitable country supposed, is shown by the specimens of wheat, barley, and oats sent to the Exhibition by the Hon. L. O'Brian. That this island could greatly benefit agricultural interests by the manufacture of fish manure to take the place of Peruvian guano, which is now again running up in price, specimens of seal and cod manure deodorized are shown. There could be obtained from the refuse of the cod fishing alone, about 25,000 tons of manure in a perfectly dried state, and from the seal fishing, with dogfish and other refuse, two or three times as much."

### Our Forests—Their Importance.

The preservation of timber in the United States is becoming a subject of vast importance as affecting climate, agricultural products and the mechanic arts. In some portions of the Eastern States, which were originally covered with dense forests of valuable trees, timber is already quite scarce, and every year becoming more so. It is still abundant in the North-western States; but there, the same management

is rapidly producing the same result: the unsparing ax is busily engaged in its work of destruction, settlers seeming eager to get rid of the wood as soon as possible, and valuing their farms in proportion to the number of acres cleared. Consequently the same result may be expected as at the East, and the next generation will probably witness the same scarcity of timber and the same baneful effects from its absence that are now felt in other portions of the country.

As for the vast region stretching from the Mississippi, or even the Wabash, to the Rocky Mountains, it is well known that immense tracts are entirely destitute of trees, and it is perhaps safe to say that less than one-tenth of the whole district is timbered land.

Aside from the intrinsic value of wood and timber for the purposes of domestic economy, some interesting considerations arise from this improvident destruction of the treasure lavished upon the eastern portion of the continent by the hand of Nature.

It will hardly be denied that sterility, or at least a great depreciation of the soil, has followed the total destruction of timber wherever it has occurred on a large scale, in connection with tillage, particularly of those countries situated south of the 40th parallel of latitude—Syria, Persia, the North Coast of Africa, Spain, once fertile countries, according to history—might be adduced as instances.

A little reflection will convince us that a total destruction of woods and forests could hardly lead to any other result: water is an element that is absolutely indispensable to vegetable life. It is always within the power of man, by proper drainage and deep cultivation, to correct the effects of superabundant moisture; but rarely can he supply the want of it by artificial irrigation, except in a very unequal manner, far inferior to that afforded by the clouds, those great natural reservoirs, or by watering; a very laborious process, necessarily confined to small patches of ground.

Now it is well known that woods have the property of attracting electricity and of making clouds discharge their contents, particularly where they exist on elevated lands. Trees, by their shade and the leaves they deposit on the soil, prevent the action of the sun from drying the soil too rapidly, and the moisture is retained to be given slowly and beneficially to the adjoining lands. But this is only a part of the valuable agency of trees in agriculture; they act as natural wind-breakers, moderating its violence to a surprising degree, and preventing its carrying off the moisture of the earth.

In those parts of our country—Fond du Lac—which are timbered, winter wheat is an almost certain crop; not from the superiority of the soil over that of the prairies—for the latter are equally fertile—but simply from the protection afforded against the wind by the surround-

woods; the snow remaining a long time on the ground to protect the plants, and the soil retaining sufficient moisture to bring them forward till the berry matures, even in the driest seasons; whereas, on the prairie, no such protection exists; the snow that falls upon the ground is partly drifted to the woods, and the remainder rapidly disappears under the combined action of the sun and of winds that meet with no obstacle, and consequently sweep over the land with unchecked violence, drying up the soil and withering the plant. For this reason, it may be said that the cultivation of winter grains is entirely abandoned on the prairie; in this section at least, as experience has proved it to be unprofitable.

The same effect is produced, although in a more subdued degree with regard to spring crops; a dry season invariably affecting the open grounds of the prairie more injuriously than the timbered or the "oak openings;" for the obvious reason that on very open lands the winds carry off the moisture much more rapidly than on those places which are comparatively sheltered.

In mountainous or even hilly countries, the total destruction of timber is attended with the most lamentable results. Mountains receive far more water and snow from the clouds than the lowlands, and when their flanks are entirely denuded of the forests, which a beneficent Nature almost invariably plants there, the torrents produced by showers and melting snow meeting no longer with the powerful obstacles presented by the roots of trees, tear the sides of the mountains; deep ravines and land slides occur; and the floods, instead of depositing enriching alluvial matter in the valleys, roll upon them masses of gravel and sand which destroy their fertility; thus causing a two-fold mischief, viz: washing the mountain-side down to its primitive formation, where only a stunted vegetation can afterward subsist, and covering the rich lowlands of the valley with barren soil, besides filling the navigable channels of rivers with sand-bars.

The wonderful adaptation of the works of nature to the wants of man is strongly exhibited with regard to the vast prairies of Illinois, Wisconsin, Missouri, Iowa, which are so destitute of fencing and building timber; and yet, by their climate and the fertility of their soil, are capable of maintaining a dense population. The Upper Mississippi, and many of its tributaries, by which those states are watered, mostly take their source in Minnesota and Northern Wisconsin, in a country covered with dense forests of pine which are pronounced by most of those who have visited them, to be inexhaustible; so that everything is ready for the benefit of man: the easily tilled prairies to supply the lumberman with food, the lumber to supply the prairie farmers with building and fencing materials, and



the navigable streams to transport the needed commodities both ways.

Would it not, however, be prudent to take care not to exhaust this apparently inexhaustible supply of the products of pine forests? has not past experience demonstrated that they can and probably will be exhausted, and that too, more speedily than most people would suppose possible? Few persons, unless in the north-west, are fully aware of the magnitude which this lumbe trade has acquired, and of the ratio at which it is constantly increasing; and probably fifty years hence little of those valuable forests will remain.

I have thus adverted to a few of the evils threatened to the agricultural interests by the wholesale and indiscriminate destruction of timber now going on in most parts of the United States. I will not enter upon the discussion of many other interesting considerations which the question suggests, such as leaving the whole country bare of shade and foliage and unattractive to the eye, as well as the certain future scarcity of wood for fuel and timber, for fencing, ship and house building, and the many purposes for which it is indispensable in the mechanic arts. The subject is certainly important, in a national as well as an economical point of view. Certain it is that should the present wholesale destruction of timber go on increasing, as it bids fair to, with the increase of population, without the adoption of some plan to renovate those valuable forests, posterity will have little reason to thank us. No large extent of country, however fertile, can be very desirable as an abode to man without a fair proportion of timbered land. Wood is almost as necessary to civilized man as the bread he eats.—G. DE NEVEU, in *Cincinnati*.

### More Light Underground.

Science is intended to give us a shield against the ills of life. A people that sits still, and views their calamities as simple "*visitations*," must have fallen back upon the savage life. An Italian priest, called upon to bless a plot of land, where a few blades of corn were contending with the enemies which usually beset them on ill-managed soil, gave the applicant a sensible rebuke. "It is of no use for me to bless your land," said the priest; "what you want is manure." At one time the people of this country were accustomed to resign themselves piously to flood and draught. In these days of progress such *visitations* are regarded only as the proper punishment of indolence and slovenly management, since they have been disarmed by the drainer's tool and the two-inch pipe. Science has taught us to catch the lightning and conduct it innocuous to the ground. We shall probably at some future date control storms of wind and rain, and until we have found out the

secret necessary for this feat, we continue to insure ourselves against their effects, so that their fury, instead of being discharged with crushing force upon the shield of one individual, is received harmlessly upon the united shields of the many. We are continually finding out that we are not the sport of unseen powers to the extent we once held to be the case, or in the manner the peasants of Norway and Sweden believe themselves to be. We have learned that we need not propitiate the wind or the rain, the lightning or the frost, the fever or the fire. The Almighty has surrounded us by certain conditions, subversive of life, not that we should be victimized, but that, having the will, we should rise superior to them, and that in the act of battling with circumstances, we should undergo that discipline which is necessary to the full development of our manhood. We are superior to the elements around us. At one age or another man has regarded himself as the creature of circumstances; but experience has taught in so many cases that he is the master of circumstances, that he may well arrive at the conclusion that he is the master of all circumstances. As to "inevitable laws," there are very few such straight lines to constrain us, save our duty to the Great Maker, and for the rest laws are finite, and retain their supremacy only so long as human experience retains its present scope; to-morrow may change all, and either give us a new view which may result in a new law, and the abrogation of an old one, or such a view as shall change the application of the old law.

The farmer who, next to the sailor, seemed to be the most helpless and exposed of human creatures, has of late years gained considerably in this sense of mastership. While he has been busy in producing food, his friend the chemist has been unremitting in his attention to certain influences which for ever were opposing his efforts. These which were represented as antagonisms, and so impersonated, were discovered rather to be negative than positive influences: influences arising rather out of the indolence of man than such as specially aroused themselves to counteract his inactivity. Sir Humphry, Davy, Liebig, Lawes, and Gilbert, have each shown that nothing is wanted to save farmers from the losses to which they have been exposed, but such a knowledge of the agencies around them as shall enable them to work *with* them, to subject them to their will, and to use them for the production of desired results.

Perhaps no chemist has given the farmers more assistance in this respect than M. Boussingault. From the laboratory of that most persevering of experimentalists they have from time to time received highly valuable contributions to scientific discovery. Never has he given a record of experiments there conducted of greater interest than those recently published under the title *Agronomie, Chimie Agricole et Physiologie*. He has been directing his attention to

the composition of the air contained in the soil, to the absorptive properties of arable land, to an estimation of what amount, separately of ammonia and nitric acid is to be found in water, rain, snow, dew, and mist. The immense importance of such inquiries upon the future of agriculture, as tending to correct the present imperfect theories of manuring, must be apparent to any one whose mind is alive to the present state of the question.

It is usual to insist upon the presenee of ammonia as food for the growing crop; but little is known as to the circumstances under which it is presented most advantageously.

If it be allowed—and this will not now be disputed—that plants grow only by addition of cells, and that these cells, consisting of two parts, owe their outer part or protection to the union of carbon and water, or its elements, and their inner part to ammonia, or its elements, nitrogen and hydrogen, it is obviously important to discover the manure in which nature works to supply this highly vitalized internal membrane, that we may learn how best to assist her. Although the elements of Ammonia are plentiful in the air, hydrogen by the decomposition of water to unite with nitrogen, M. Boussingault's experiments have brought him to the conclusion that the cell is not supplied with it directly from the atmosphere. Ammonia must be accounted for from elsewhere. In the course of his researches he says, that he found the seed to be a perfect storehouse of nitrogen and phosphorus, and of all the characteristic materials of the vegetable species whose seed it is. In virtue of the existence in it the seed grew in a chemically pure air and barren soil, and although fed only with pure water, developed into a perfect plant, which flowered and ripened seeds with no more nitrogen than was in the seed to begin with. It is well to remember that there is usually from five to six per cent. of nitrogen in the seed, while in the entire plant there is one per cent.

The experiments he made upon fertile soils abound with practical suggestions. As with the atmosphere so with the soil: although four-fifths of its bulk is nitrogen, plants can appropriate nothing from the atmosphere save a few stray particles of ammonia floating in it. In a fertile soil, similarly, there may be 96–100ths of nitrogen, “locked up from the plant in organic compounds, which the plant cannot decompose.” Boussingault very justly says, on this evidence, that analyses of soils and manures, detailing the quantity of this constituent or of that, afford information really of little value to the farmer, who must seek to know the *conditions* in which they are found there, whether free or in bondage. He comes to the conclusion that the only sources of nitrogen, and those from whence the vegetable cell is composed, are ammoniacal salts and nitrates. Phosphates, he insists are indispensable in every case, and nitrogenous matter is also needful as a companion

to the nitrate. “A nitrate is preferable to an ammoniacal salt, inasmuch as nitrogen appears to be fully assimilable by plants, and being more fixed is less likely to be lost than ammoniacal salts, all of which are more or less volatile.”

We are scarcely aware how much depends upon carbon, and how important it is for a sufficient quantity to remain free to combine with and fix the ammoniacal salts and nitrates in the tissues of the growing plants. Unless it is at liberty to perform this good office, such elements as these may exist to repletion in the soil without benefit to the plant. Carbon, however, serves a more important purpose still. As food plants, to whose existence it is essential, it can only become assimilated and combined with oxygen, that is as carbonic acid. Boussingault then details some interesting experiments suggested by this fact, to find the quantity of carbonic acid which exists in the air of the soil. One set of experiments he devised to prove the *quantity* of air held by soils of various kinds; another to ascertain the *quality* of that air. His evidence and substance with regard to the first set is as follows: The average for fair soils may be stated at 400 cubic yards per acre, taken at a depth of 14 inches; the entire volume of the acre taken to this depth is equal to 1,750 cubic yards; so that in such a soil the contained air is about a quarter of the density which it is in the superincumbent atmosphere. Soils very rich in humus and recently manured gave the largest quantity of unfixed air, sands and clays the least. With respect to quality, the experimenter found more carbonic acid in the air of the soil than in the atmosphere. In the latter it is usual to allow 4 parts carbonic acid in 10,000 atmospheric air; but a soil rich in humus contained 974 in 10,000, the soil of a meadow contained 179, and no soil, according to his experience, run short of 100 parts. Striking an average, the air contained in one acre of arable land, 14 inches deep, equalled 1,750 cubic yards; soil manured a year previously contained as much carbonic acid as is found in 9,446 cubic yards of the atmosphere; so that the acre of soil lately manured contains as much as there may be estimated in 60 acres of the atmosphere 14 inches deep.

Before referring to the conclusion deduced from such premises, there yet remains one point of special interest elucidated by these investigations. In comparing the oxygen of the air confined in the soil with that in the atmosphere, it was found that the latter is always deficient in this busy-body constituent by nearly the same quantity as goes to combine with carbon to produce carbonic acid. It is also not irrational to suppose that oxygen, beyond burning the carbon of the organic remains in the soil, unites also with the free hydrogen to be found there, and thus ministers to the wants of the rootlets in the matter of water as well as of carbonic acid. This service is more important than at first it appears



to be; since were carbon and oxygen to combine in the presence of the nascent hydrogen—that is to say, were there not sufficient members of the oxygen family to ally with those of the carbon family on the one hand, and the hydrogen family on the other—the unallied members of the hydrogen family, in their single life, might be productive of considerable damage. If that hydrogen can be utilized as water, all is well; but if left alone, it becomes the victim of other bad spirits, and produces such combinations as formic acid, humic acid, and acetic acid, which so acting are destructive of life.

For the agriculturist, there is but one practical conclusion for all this. He will readily infer that the soil, in order to fertility, must contain a notable quantity of organic matter, which the atmosphere, by a process of slow combustion, may transfer into carbonic acid and water, and ultimately into nitrates and ammoniacal salts. "Organic matters, when submitted to the united influence of air, moisture, and a suitable temperature, give rise to carbonic acid and water; and if nitrogenous, to ammonia. When buried in a soil sufficiently open, their combustion is so obvious that, in warm climates, it may happen at the end of some years that a clean soil, rich in humus, becomes so poor as to be unable to give a crop without the application of manure. Thus mould, humus, and all the last terms of the putrefaction of vegetable substances, are so many sources which emit carbonic acid; and it is beyond doubt that an important part of the efficacy of organic origin ought to be attributed to this remission, whether it be that the acid gas absorbed by the roots runs the course of the organism of the plant, or that, turned into the surrounding atmosphere, the light decomposes it under the influence of the leaves which assimilate the carbon." It is very easy to regard, therefore, every particle of humus in the soil as "a focus from whence carbonic acid gas is constantly emanating" to modify that atmosphere which descends from above, and fit it for its mission to the roots which pervade the seed-bed in search of support for the wondrous development of woody fibre, green leaf, tender blossom, and perfected seed. F. R. S.—*Express*.

### The Advantages Derived from Shading the Soil with Green Crops.

We have frequently contended—and the additional experience which every year brings with it further confirmation to the fact—that the rapid exhaustion of even our very best soils is not due so much to constant cropping as to the hoed crops which play so prominent a part in our system of agriculture. It is true that corn and tobacco draw largely upon our soils, and especially upon the phosphates and the potash which they contain. It is true, also, "that shallow and careless cultivation has done much to

assist in exhausting lands which were regarded at one time as of almost in exhausting lands which were regarded at one time as of almost inexhaustible fertility," and statistics likewise show that whilst the area of cultivation has been extended year after year, the average product per acre has diminished.

One of the primary reasons why these crops have proved so deleterious to the soil, is the fact that the system of cultivation required to bring them to perfection, keeps the intervals between the growing plants utterly bare during the hottest months of the year. The action of the sun upon these exposed surfaces, together with the constant stirring of the soil for the purpose of keeping it loose and light and friable, whilst it promotes the solubility of its plant-food, yet at the same time exposes the organic and inorganic substances which constitute in their several proportions the elements of fertility to great loss, both by evaporation and by washing rains. As an illustration of this process of exhaustion by the simple exposure of bare soil to the action of the sun and the rain in summer time, we may cite the following facts. A piece of land kept constantly ploughed, without any crop whatever being grown upon it, if not suffered to grow up in weeds, will gradually lapse from a state of fertility into one of comparative barrenness. It has been losing year after year, by evaporation and by leaching rains, the greater portion of its plant-food, its vegetable and mineral wealth, if we may be permitted to so term it. As a signal proof of this we have in our mind's eye a peach orchard which twenty years ago was planted upon as fine a piece of soil as is to be found anywhere within ten miles of Baltimore. It was a light, loose chocolate soil, and the quality when the orchard was originally planted, was that of the best tobacco land. That orchard was ploughed regularly every season to promote the growth of the peach trees, and to facilitate the ripening of the fruit. It is the usual custom with the best peach-growers. In twelve years, or by the time the peach trees began to show signs of decay, those fifty acres bore every evidence of a soil that had been utterly exhausted. Yet with the exception of the peach trees themselves, not a single crop of any kind had been taken from the land. Now, this rapid exhaustion could not be charged to the demands made upon the soil by the peach trees alone, but to the fact that the soil was kept perfectly bare throughout the summer.

Again—take the converse of the proposition. So long as lands are kept shaded they continue to increase in fertility. Does any one doubt this? Let him turn out an old field, and after a while a new growth of wood and brush will spring up, except when the land is worn into gullies, and with the growth of this wood, the

droppings of the leaves and the shade of the foliage, a portion of the lost fertility will be restored. Yet the trees have been drawing nutriment from the soil all through these years. Take another instance—leave a bed of corn-stalks, or a pile of brush, upon a field that the previous season had been planted to corn, and is consequently bare of herbage or weeds: or, build a fodder stack in the field and fence it off from the cattle. When the land comes into crop again the next season, the place from which that pile of stalks, or brush, or fodder stack, will show a racker growth than any other part of the field. What was the reason of this difference?—nothing more than that the ground was kept shaded, evaporation was prevented, the soluble salts were retained, and the land got the benefit of them.

Instances of this kind are constantly coming up before the eyes of the observant farmer and from them he may draw the following conclusions, for they are susceptible of none other:—

First—That the exposure of the soil to the sun, heat and rain of our semi-tropical summers rapidly exhausts it of its fertilizing elements.

Second—The covering or shading the soil preserves those elements.

Third—That green crops, such as clover, should take the place of hoed crops more frequently in our system of husbandry, and that the less frequently the surface of the soil is exposed to the wasting influences of the sun, wind and rain, the longer it will retain its original condition of fertility.—*Baltimore Rural Register.*

### Grazing.

The art of grazing embraces the practical solution of two important problems, viz., 1st, how to obtain the greatest amount and best quality of herbage from any given pasture; and 2nd, how to consume this herbage by live stock, so as to make the most of it. The grazier has ever to keep in view what is best for his land and what is best for his stock; and must take his measures throughout the entire season with an eye to both these objects. As regards the first of them, experience yields the following maxims for his guidance:—

Never to stock his pastures in spring until genial weather is fairly established.

Never allow the grasses to run to seed, nor parts of a field to be eaten bare, and others to get rank and coarse.

Duly to spread about the droppings of the cattle; to remove stagnant water, and to extirpate tall weeds.

Some time about midsummer to make a point of having the pasture eaten so close that no dead herbage or "foggage" shall be left on any part of it.

In what more immediately concerns the wel-

fare of the live stock he is in like manner taught in stocking his pastures.

To adapt the stock as regards breed, size, condition, and numbers to the actual capabilities of the pasturage:—

To secure the stock at all times a full bite of clean, fresh grown, succulent herbage.

In moving stock from field to field take care that it be a change to better fare—not worse.

Pasturage consists either of natural herbage or of "seeds." In the south-eastern counties of Scotland there is little good old grass: all the really fertile soils being employed in arable husbandry, with the exception of small portions around the mansions of land owners. The pasturage consists, therefore, for the most part, of the cultivated clovers and the grasses. Comparatively few cattle are there fattened on grass, the object graziers being rather to stock their pastures with young and growing animals, and to get them into forward condition for being afterwards fattened upon turnips. The grazing season is there also much shorter than in England, old grass seldom affording a full bite for a well conditioned bullock before the middle of May, or later than the middle of September. It is quite otherwise in England, various parts of which abound with old grass lands of the very richest description, on which oxen of the largest class can be fattened rapidly. These, in many cases, admit of being stocked towards the end of April, and under judicious management continue to yield excellent pasturage for half the year. When stocked with cattle in fresh condition, two sets or "runs" are not unfrequently fattened, in such pastures, in the same season. These grass-fed cattle begin to come to market early in July, and for four or five months thereafter constitute the chief supplies of beef in our markets.

Cattle already well fleshed are alone suitable for turning into these rich old pastures. When this is attended to, and care taken not to overstock the pastures until they yield a full bite, the progress of the oxen will usually be very rapid. It is now customary to hasten this progress by giving about 4lbs. of oil-cake to each beast daily. The dust and crumbs being sifted out, the bits of cake are strewn upon the green sward, from whence they are quickly and carefully gleaned by the cattle. This is usually a profitable practice. It brings the beasts forward rapidly, and proves their appearance and handling, and, besides enriching the land, admits of about twelve per cent. more numbers being fed upon a given acreage. These choice old pastures are usually occupied in combination with others of inferior quality. The most forward lot of cattle having been fattened and sold off from the former, they are ready to receive a fresh stock. If it is contemplated to get them also fattened before the expiry of the season, they are not put on the best land instantly on the first lot being sold;



but a crowd of sheep or store beasts being turned upon it for a few days, the existing herbage is cleared off, and the pasture (*Anglic*) "laid in" or (*Scottice*) "hained," until a fresh, clean growth fits it for receiving a suitable number of the best cattle from the other pastures. It is inexpedient to graze sheep promiscuously with cattle on these best lands, as they pick out the sweetest of the herbage, and so retard the fattening of the oxen. Neither do we approve of having horses among such cattle; not so much from their interfering with their pasturage, as from the disturbance which they usually cause galloping about. This does not apply to the draught horses of the farm, which are usually too tired and hungry when turned out from the yoke to mind anything but feed and rest; but it is better thrift to soil them; and frolicsome mischievous colts are unsuitable companions for sedate, portly oxen. In favourable seasons the grass often grows more rapidly than an ordinary stocking of cattle can consume it, in which case they select the best places and allow the herbage on some parts to get rank and coarsen. If these rank places are neglected until the herbage gets dry and withered, the finer plants die out, the coarser growing grasses usurp the ground, and the pasturage is injured for future years. To check this evil in time, these neglected places should be mown, and the grass either brought to the homestead for soiling, or left to dry where it grew, in which state the cattle will eat up most of it, and be the better for it, especially if their bowels are unduly relaxed by the succulence of the growing herbage. The remarks now made apply equally to all old pastures employed for the fattening of cattle, although not of the first quality. All that is required is to observe due proportion betwixt the capabilities of the pasturage and the breed and size of the cattle. A pasture that will fatten a five-stone ox may be quite inadequate for one of seventy, and the hardy Galloway or West Highlander will thrive apace where the heavier and daintier short-horn could barely subsist.

With the exception of the best class of rich old pastures, grass is usually consumed to greater profit by a mixed stock of sheep and store cattle than by one kind of animals only. This holds true both as regards the natural herbage of pastures or water meadows, and cultivated grasses, clovers, or sainfoin. When old pastures are mixed "seeds" are grazed chiefly by sheep, the same rules apply that have already been noticed in connection with cattle. The herbage should, if possible, be fully established in a growing state, and so far advanced as to afford a full bite before the pasture is stocked in spring. If the sheep are turned into it prematurely their close nibbling hinders the plants from ever getting into a state of rapid growth and productiveness, and the stock of roaming over the whole field, and keeping long afoot before they can

glean enough to appease their appetite, is prejudicial alike to them and to their pasture.

The prudent grazier endeavours to avoid these evils by having his stores of swedes or mangles to last until the full time at which he may reckon on having good pasturage. In distributing the flocks to different fields, the best pasturage is allotted to those that are in most forward condition. It is advantageous to have the pasture so subdivided that one portion may be double stocked while another is rested. By frequently removing the stock from the one portion to the other the herbage of each by turns gets time to grow and freshen, and is more relished by the sheep than when the whole is tainted by their uninterrupted occupation of it. In the case of clover, trefoil, sainfoin, and water meadows, this principle is yet more fully carried out by folding the flock and giving them a fresh piece daily. The crop is thus eaten close off at once in daily portions, and the plants being immediately thereafter left undisturbed, and receiving over the whole area their due share of the excrements of the flock, grow again more rapidly than when subjected to constant browsing under a system of promiscuous grazing. This plan of folding sheep upon such crops has the same advantages to recommend it as soiling, only that it is cheaper to shift the fold daily than to mow and cart home the forage and carry back the manure. In the case of water meadows it is the practice to irrigate them afresh as each crop of grass is fed off. This is attended with considerable risk of the sheep getting tainted with rot, which must be guarded against as much as possible. In the first place, it is well to give them a daily allowance of bran, beans, or cake, and salt; and besides this to put on this land only such sheep as are nearly ready for the butcher. They will thus fatten very rapidly, and be slaughtered before there is any harm to ensue.

The modes of grazing which we have now described are appropriate for sheep in forward condition. The poorer pastures are usually stocked with nursing ewes and lean sheep bought in from higher grazings. Lambs both before and after weaning, require clean pastures, and of course, frequent changes. If kept on tainted pastures they are certain to become subject to diarrhoea, or to be stinted in their growth, and to have their constitution so weakened that many of them will die when afterwards put upon turnips. To avoid these evils they must be frequently moved from field to field. A sufficient number of store cattle must be grazed along with them to eat up the tall herbage and rank places avoided by the sheep. After the lambs are weaned, the ewes require to fare rather poorly for a time, and thus can be made use of to eat up the worst pasturage and the leavings of the young and fattening sheep. When the latter, with the approach of autumn, are put upon aftermath, clover stubbles, rape, cabbages or

turnips, their previous pastures should in succession be thickly stocked by the ewes and other store stock, so as to be eaten bare, and then get leave to freshen and get ready for ewes by rutting time, when they require better food. In depasturing sheep on poor soils it is usually highly advantages to give them a daily allowance of grain or cake in troughs, which must be shifted daily, so as to distribute the manure regularly over the land. By means of this auxiliary food sheep can be fattened on land the herbage of which would not alone suffice to do this. It admits also of a larger number of sheep being kept per acre, and of the pasturage being fed off more closely than could otherwise be done. The produce of poor silicious soils, both in grass and after crops, is much increased by the additional manuring and treading which the consumption of such extraneous food upon them occasions.

It is always advantageous to have pastures provided with a shed under which the stock can find shelter from sudden storms, or from the stacks of insects, and the scorching rays of the summer's sun. When such sheds are regularly trewed with dried peat or burnt clay, much valuable compost for top-dressing the pastures can be obtained. The dung of the cattle thus secured and applied benefits the pastures more than that which is dropped upon it by the animals. Such clots require to be spread about from time to time.

To carry out successfully the various details now referred to, which constitute the art of grazing, there is required much foresight, accurate observation, sound judgment, and constant superintendence. Without all this it is impossible to make the most of any given amount of live stock and pasturage, and hence the extraordinary disparity in the results obtained by different graziers from similar materials.

The temperate climate of Britain is so peculiarly favorable to the growth of the grasses and other pasture plants, and to the keeping of live stock with safety in the open fields for the large part of the year, that the practice of consuming these crops by depasturing, as already described, has hitherto been decidedly preferred to soiling. One consequence of this is, that forage crops have been comparatively neglected. There is now, however, a growing conviction among agriculturalists that it is more convenient to keep neat cattle and horses during summer in yards or loose boxes, and to feed them with succulent forage mown and brought to them daily as it is needed, than to turn them adrift to browse in the fields. The pasturing plan is preferred by many because it involves the least labour, and is alleged to be more healthful to the animals. In behalf of the soiling plan, it is urged that a given space of ground under green crops keeps nearly twice as much stock when its produce is mown and consumed elsewhere than when it is constantly nibbled and trodden upon; that

housed cattle being exempted from the vicissitudes of hot weather, the attacks of insects, mutual disturbance, and the labour of gathering their food, eat less and yet fatten more rapidly than they do at pasture; that more good is gotten of their excrements when mixed with litter and trodden down under cover than when dropped about in the open fields; and that land from which a green crop has been mown, when ploughed up is freer of weeds and (other things being equal) bears a better crop than that which has been pastured. It is a further recommendation to the soiling plan that it admits of oilcake or meal being administered along with green food with a precision and economy that is unattainable in the pasture fields.

There being so many and such cogent reasons in favor of the practice of soiling, we may warrantably anticipate that it will in future be much more generally adopted. It is proper, however, to notice that the success of this system is absolutely dependant on the following conditions. The green food must be mown and brought home at least *twice* a-day, owing to the rapidity with which it ferments when put together; it must be given to the stock not less than *four* times daily, and only in such quantity at each feed as they can eat clean up in the interval betwixt meals; they must have constant and ample supplies of pure water and fresh litter; and, in particular, matters must be so arranged that there shall be an unfailing supply of green forage of the best quality through the entire season. This is accomplished either by successive cuttings of one kind of crop from the same ground—as of irrigated meadow or Italian ray-grass—or by a combination of such crops as naturally come to maturity in succession, or are made to do so by a sequence of sowings. From what has been said, it is obvious that soiling can only be carried out successfully with a moderately good soil and climate, a liberal use of manure, and skill and foresight on the part of the farmer. With these, however, its results will usually be highly satisfactory. It is peculiarly adapted for clay soils, on which the culture of root crops is attended with much difficulty, and where there is, therefore, abundance of litter for use in summer, and much need for the soiling system to get it converted into good manure.—*Willson's British Farming*.

## How to Calculate the Value of Manures

FROM PROFESSORS HODGE'S FIRST STEPS TO CHEMISTRY.

The following are the prices per ton at which the chief ingredients of manures in a state of purity may be estimated. These prices, it must be recollected, will be influenced by the fluctuations in the rates to which the commands upon which the calculation of their value is based are



subject. They, however, may readily be corrected, and will enable farmers to obtain a close approximation to the money value of manures.

VALUE PER TON OF THE INGREDIENTS SHOWN BY ANALYSIS TO EXIST IN GUANO AND ARTIFICIAL MANURES.\*

|                                                                                                   |         |                                                                            |
|---------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------|
| Water .. .. .                                                                                     | £0 0 0  | } Dependent upon the amount of ammonia which they are capable of yielding. |
| Organic and ammoniacal nitrogenized matters, .. .. .                                              |         |                                                                            |
| Organic matters destitute of nitrogen, and not capable of yielding ammonia by their decay .. .. . | £0 10 0 |                                                                            |
| Ammonia .. .. .                                                                                   | 56 0 0  |                                                                            |
| Phosphate of lime .. .. .                                                                         | 7 0 0   |                                                                            |
| Phosphate of lime rendered soluble .. .. .                                                        | 25 0 0  |                                                                            |
| Alkaline salts, when chiefly soda compounds, .. .. .                                              | 1 0 0   |                                                                            |
| Potash .. .. .                                                                                    | 20 0 0  |                                                                            |
| Common sulphate of lime, (gypsum unburnt), .. .. .                                                | 1 0 0   |                                                                            |

\* To assimilate the prices given in the table with the present increased value of bones, guano, and all fertilizing materials, it will be necessary to add one-sixth to the value per ton of the manure.

#### ILLUSTRATION OF THE METHOD OF VALUATION DESCRIBED.

A compound lately exposed for sale in the North of Ireland, and described as a Peruvian Guano of superior quality, was founded on examination, to consist of the following ingredients:—

|                                              |        |
|----------------------------------------------|--------|
| Water .. .. .                                | 9.94   |
| Organic matter and ammoniacal salts, .. .. . | 22.16* |
| Alkaline sulphates and chlorides, .. .. .    | 8.65   |
| Phosphates of lime and magnesia, .. .. .     | 16.08  |
| Carbonate of lime, .. .. .                   | 9.23   |
| Earthy matters, .. .. .                      | 39.64  |
|                                              | 100.00 |

\* Capable of yielding 3.5 parts Ammonia.

The valuation of the sample, according to the plan described, will show how far it falls below genuine Peruvian guano, worth from £11 to £12 per ton:—

|                                          |         |      |       |
|------------------------------------------|---------|------|-------|
| Moisture, .. .. .                        | 9.84 x  | £0 0 | £0 0  |
| Organic matters, .. .. .                 | 22.16 x | 0 10 | 11 0  |
| Alkaline sulphates and chlorides .. .. . | 3.95 x  | 1 0  | 3 0   |
| Phosphates of lime and magnesia, .. .. . | 16.08 x | 7 0  | 112 0 |
| Carbonate of lime, .. .. .               | 9.23 x  | 0 5  | 0 0   |
| Earthy matters (red loam), .. .. .       | 39.65 x | 0 0  | 0 0   |
| Ammonia, .. .. .                         | 2.5 x   | 56 0 | 196 0 |

100)3.22 0

20

4.40

Thus taking the proportions of the several constituents, shown by analysis to be contained in the manure, to the farmer, are worth £22, so that the actual value of the manure is only £3 4s., or at present prices £3 14s. 8d. per ton.

#### Analyses of linseed according to Dr. Voelcker:

|                                  |       |
|----------------------------------|-------|
| Water .. .. .                    | 7.50  |
| Oil .. .. .                      | 34.00 |
| Flesh-forming matter .. .. .     | 24.44 |
| Heat-giving constituents .. .. . | 30.73 |
| Inorganic matters (ash) .. .. .  | 3.33  |

One plant of the wild carrot (*Daucus carota*), having 600 flowers, and 2 seeds to each flower, gives 1,200 seeds.

## Agricultural Intelligence.

### Agricultural Exhibitions this Autumn.

#### PROVINCIAL AND STATE.

Upper Canada, at Toronto, September 22nd—26th.  
Lower Canada, at Sherbrooke, September 17th, 18th, 19th.  
New Y. State, at Rochester, September 30 to October 3.  
Illinois State, at Peoria, Sept. 30 to Oct. 4.  
Ohio, at Cleveland, Sept. 16 to 19.  
Vermont, at Rutland, Sept. 9 to 12.

#### COUNTIES.

Stormont, at Cornwall, Oct. 8th and 9th.  
North Simcoe, at Barrie, Oct. 1st.  
Brockville, at Brockville, Sept. 18th and 19th.  
South Simcoe, at Bradford, Oct. 2nd.  
Durham West, at Bowmanville, Oct. 9 and 10.  
North Lanark, at Almonte, Sept. 16th.  
Russell, at Osborne, Sept. 30.  
Peel, at Brampton, Sept. 17th and 18th.  
North Leeds & Grenville, at Frankville, Oct. 1.  
North Ontario, at Prince Albert, Oct. 7th.  
East York, at Markham Village, Oct. 9th.  
South Wellington, at Guelph, Oct. 10.  
North Wellington, at Fergus, Oct. 14.  
South Grenville, at Prescott, Oct. 8th and 9th.

#### TOWNSHIPS.

Puslinch, at Aberfoyle, Oct. 8th.  
Hamilton Township, at Baltimore, Oct. 9.  
Barton and Glanford, at Ryckman's Corners, Oct. 2nd.

### The Great Sale of Southdowns at Babraham.

On Wednesday, the 18th inst., a goodly company—though not so numerous as that which met about the same time last year—was gathered at Babraham, to witness the last of those sales which for nearly 40 years have been conducted at that place, and during which time Mr. Jonas Webb has carved out for himself, as a breeder of Southdowns, a name which will last as long any records exist of the history of British agriculture.

Among the company there was a large number of distinguished foreigners, some of whom came not merely to see what had been accomplished by the skill, energy, and perseverance of Mr. Webb, but to secure for themselves some of the beautiful and matchless animals that were to be disposed of. Among these we distinguish by way of pre-eminence, the Marquis Perallas, a Spanish nobleman, who fills the post of chairman of the agricultural jury at the International Exhibition, and whose purchases for the Spanish Government amounted to £570, and M. Fischer of Magdenburgh, who purchased to the extent of £676.

Although this was the last of Mr. Jonas Webb's public sales, and he therefore had no

interest in discarding the few comparatively imperfect sheep that will arise in a large flock, there was not one out of the 148 that passed the "ordeal hammer" that would not do credit, independent of the pure blood that flowed in its veins, to any man's stock of store sheep. This we mention, in connection with the fact of these sheep being all yearlings, to account for the somewhat smaller average prices realized as compared with those of last year. Tenant farmers came to bid against lords of title and landlords by profession, and if the former did not feel that they could outbid the latter in one or two instances, they were probably pleased with the beautiful and excellent sheep they secured at very high prices.

At the appointed hour business commenced, but as the space at our command is very limited, we must confine our record of the sales effected to those which reached such a figure as to deserve special notice. We may just mention, however, that lot 63, being the highest priced ram, was secured by Sir T. Lennard for 140 guineas. It will be remembered that at the sale last year Sir Thomas gave the highest price for a pen of ewes. His name, therefore, will ever occupy a distinguished position in connection with the Babraham flock.

Lot 66 made 70 gs., and was bought for the Duke of Richmond; lot 64 was bought for 40 gs., by Mr. Samuel Jonas; lot 67 for 25 gs., by Mr. Cain, Sussex; lot 20 for 91 gs., by Herr Zeopprütz; lot 21 for 72 gs., by H. D. Mildred, Esq., baker, Dorsetshire; lot 25 was bought at 50 gs., for the Duke of Bedford; lot 26, for 40 gs., by Mr. Henry Webb; lot 27, for 30 gs., by Mr. Marris, for Lord Yarmouth; lot 28 (high figures came thick here) for 86 gs., by Professor Nathorst; lot 33 was bought at 27 gs., by Mr. Hart; lot 39, at 54 gs., by Mr. Rigden (Sussex); lot 40, at 40 gs., by Earl Winchelsea; lot 45, at 26 gs., for the Duke of Beaufort; lot 46, at 67 gs., by Herr Fischer; lot 53, at 20 gs., for Lord Chesham; lot 60, at 36 gs., by Mr. Walton; lot 61, at 35 gs., by Monsieur Bonneau; and the last ram before luncheon, lot 62, at 94 gs., by G. S. Foljambre, Esq; lot 68 went at 31 gs., to Herr Fischer; lot 47, at 17 gs., to Mr. Biddell (Playford); lot 80, at 15 gs., to Mr. John Clayden; lot 90, at 25 gs., to Mr. Turner; lot 91, at 25 gs., to Professor Nathorst; lot 92, at 28 gs., to Mr. Samuel Jonas; lot 102, at 55 gs., to Lord Walsingham; lot 103, at 21 gs., to Mr. Manbury; lot 104, at 23 gs., to the Duke of Beaufort; lot 105, at 15 gs., to Mr. James Everett; lot 106, at 15 gs., to Lord Braybrooke; lot 107, at 20 gs., to Lord Walsingham; lot 114, at 21 gs., to Mr. J. C. Taylor (America); lot 126, at 21 gs., to Mr. S. Jonas.

The yearling ewes were very beautiful, and the lots of five, as they were sold, were nicely matched as to color and size; and they excited

quite a smart fire of biddings among the foreigners. The first lot of five offered were sold at 15½ gs., per head, to Herr Fischer; lot 2, at 15 gs., per head, to Mr. Corneille; lot 3, at 13½ gs., ditto, to Professor Nathorst; lot 4, at 11 gs. per head, to Count Chanace; lot 5, at 12½ gs., to Marquis Perallas; lot 6 (only four, one having died), at 15 gs., to Herr Fischer; lot 7, at 10½ gs., to M. Belleras; lot 8, at 14½ gs., to Marquis Perallas; lot 9, at 20½ gs., to Herr Fischer (the highest price given); and lot 15, at 14 gs., to Lord Braybrooke. Only 11 out of 20 lots sold before luncheon were bought for this country, the remaining 19 being for France, Germany, America, and Sweden.

The Marquis Perallas, of Spain, was a large buyer, especially of the ewes.

The following is a summary of the sale:—

|                                |         |   |            |
|--------------------------------|---------|---|------------|
| 148 yearling rams averaged ..  | £19 0 0 | = | £2811 18 0 |
| 289 yearling ewes averaged ..  | 10 1 3  | = | 2908 10 0  |
| 437 yearling sheep averaged .. | 13 1 10 | = | £5720 8 0  |

The summary of last year's sale may be given for comparison sake:—

|                                |          |   |              |
|--------------------------------|----------|---|--------------|
| 109 yearling rams averaged ..  | £24 17 6 | = | £2711 2 0    |
| 199 yearling ewes averaged ..  | 11 2 0   | = | 2209 4 9     |
| 308 yearling sheep averaged .. | 15 19 6  | = | 4920 6 0     |
| 659 (add) older sheep do ..    | 9 2 0    | = | 6006 0 6     |
| 967 sheep (1861) averaged ..   | 11 6 0   | = | 10,916 6 6   |
| 437 sheep (1862) average ..    | 13 1 10  | = | 5720 8 0     |
| 1404 sheep averaged ..         | 11 17 3  | = | £16,646 14 6 |

At the close of the sale hearty cheers were given for Mr. Webb and his family, and the regret was universal that a period has at length been put to the princely hospitalities at Babraham.—*Bell's Messenger*.

## Horticultural.

### Criterion of Fine Vegetables.

The Garden is the most important appendage to the many of the substantial comforts, and some of the most refined luxuries of human sustenance. Its cultivation furnishes a source of health, pleasure and economy, which may be enjoyed by every industrious owner of a few rods of ground, who can devote a little time between his hours of business or labour to this delightful employment. If his occupation and extent of his enclosure will allow him to indulge his taste for fruits and flowers, he may take much pleasure and derive great profit from the management of the vegetable garden alone.

For the purpose of selecting an assortment of the purest vegetables, best suited to the use for which they are grown, we have fixed upon certain qualities which we seek amongst the different kinds:

In the Blood Beet we always look for deep colour, smooth handsome form, small top, and



sweet, tender flesh. In the Orange Carrot, small top, smooth root, and deep orange colour. In the Cabbage, short stump, large compact head, with but few loose leaves. In the Cucumber, straight, handsome form, and dark green colour. In the Lettuce, large close head, pleasant flavour, with the quality of standing the heat, without soon running to seed. In Sweet Corn, long ears, very shrivelled kernels filled over the end of the cob. In the Cantaloup Melon, rough skin, thick, firm flesh, and high flavour. In the Water Melon, thin rind, abundant and well flavoured juice, and bright red core. In the Onion, thick round shape, small neck, deep colour, mild flavour, and good keeping quality. In the Parsnip, small top, long smooth root, rich flavour. In the Pea, low growth, full pods, large and tender peas, rich flavour. In the Scarlet Radish, deep colour, small top, clear root, and quick, free growth. In the Squash, medium size, dry, fine grained, deep coloured flesh. In the Turnips, handsome form, small tops and tap root, sweet crisp flesh.

Those who have never seen better sorts than they possess, suppose they are of the first quality, when they may be very inferior, or almost worthless, when compared with the finest varieties.—*Gardener's Almanac.*

### Moral Effects of a Taste for Flowers.

A correspondent sends us the following extract from an address delivered before the British Association, "on some practical reports derivable from the study of botany :"

"Mr. Ward proceeded to urge the importance of cultivating a taste for legitimate horticultural pursuits among the members of the labouring population, as it was a well established fact that, wherever a pink or a carnation or a rose was seen outside a cottage, there was a potato or a cabbage for the pot within ; that if there was not happiness, there was the nearest approach to it in this world, content :

'Yes, in a poor man's garden grow

Far more than herbs or flowers—

Kind thoughts, contentment, peace of mind,

And joy for weary hours."

And a recent communication from the bishop of Ripon was to this effect : "The parish of Arncliffe, near Skipton, in Yorkshire, situated in a very wild part of the country, and inhabited by a wild and lawless tenantry, had been for many years without a resident clergyman, the living being a very poor one—not above £30 a year. The present incumbent, the Rev. Mr. Boyd, determined, however, to set himself down amongst them, and to use his utmost exertions in bettering their wretched condition. To this end he surrounded his house with a fine garden well stocked with lovely flowers, and induced his peasantry—but with great reluctance—to come in one by one to see and admire his flowers, and

to take them home and cultivate them. Now, for the first time, they had light in their dwellings ; ultimately, through the kind and constant personal care which was bestowed upon them, they have become the most contented and happy set of villagers in all Yorkshire."—*Church of England Magazine.*"

### Domestic.

#### Receipts for Making Various Articles of Food of Indian Corn Meal.

*Corn Meal Pudding.*—Scald four quarts of milk, stir into it one quart of sifted meal, one cup molasses, a teaspoonful of salt, a little spice of any kind you like ; bake it three or four hours in a pretty hot oven.

*Baked Pudding.*—To two quarts of milk, add one quart of meal, a little salt, and a cup of sugar. Prepared by heating the milk over the fire, stirring it occasionally to prevent its burning : when it scarcely boils, remove it, put in the salt and sugar, and scatter in the meal, stirring rapidly to prevent it collecting into lumps ; put in the nutmeg and turn it in a deep pan. Bake immediately, or otherwise as may be convenient, in a hot oven, three hours. When it has baked an hour or more, pour over the pudding one gill or one half pint of milk ; this will soften the crust, and form a delicious whey.

*Boiled Pudding.*—Into two quarts of meal stir three pints of boiling water, some salt, and a gill of molasses or treacle ; spice or not, as you choose. Tie up in a strong cloth or pudding boiler, put into boiling water, and cook over a steady fire for three hours.

*Superior Boiled Pudding.*—To one quart of Indian meal, add three pints of hot milk, half a pint of molasses or treacle, a dessert spoonful of salt, an ounce or more of beef suet shred fine. Stir the materials well together, tie them in a cloth, allow room for the pudding to swell one-eighth larger, and boil it six or eight hours. The longer it boils the better. It may be made without suet.

*Indian Dumplings.*—Into one quart of meal, stir one pint of boiling water, and make them into smooth balls, two or three inches in diameter. Immerse into boiling water, and cook over a slow fire twenty or thirty minutes. If you choose, put a few berries, a peach, or a part of an apple, in the centre of each Dumpling.

*Superior Dumpling.*—To one pint of sour milk with carbonate of soda, add one quart of meal and a large spoonful of flour ; roll out with flour and put in an apple, and cook as before.

*Green Corn Pudding.*—Take eighteen ears of green corn ; split the kernels lengthwise of the ear with a sharp knife, then with a case

knife scrape the corn from the cob, leaving the hulls on the cob; mix it with three or four quarts of rich sweet milk; add four eggs well beaten; two tablespoonfuls of sugar; salt to the taste; bake it three hours. To be eaten hot with butter.

*Homony*.—This article is considered a great delicacy throughout the Southern States, and is seen on almost every breakfast table. It is prepared thus:—The corn must be ground not quite into meal. Let the broken grains be about the size of a pin's head. Then sift the flour from it through a fine hair sieve. Next shake the grains in the sieve, so as to make the hulls or bran rise to the top, when it can be removed by the hand. The grains must then be washed in several waters, and the light particles, which rise to the surface, pour off with the water through the fingers, so as to prevent the escape of the grains. Have a pot or boiler ready on the fire with water in it; add the grains at the rate of one pint to two pints of the water. Boil it briskly about twenty minutes, take off the scum, and occasionally stirring it. When the homony has thoroughly soaked up the water, take the boiler off the fire, cover it, and place it near, or on a less heated part of the fire, and allow it to soak there about ten minutes. It may be eaten with milk, butter, treacle, or sugar. The flour or meal sifted out can be used to make bread or cakes.

*Buck-wheat Cakes*.—This cheap article of food is considered a luxury throughout the American States from the first of October to the first of April. During this period it is found almost everywhere, at breakfast, on the most frugal and the most sumptuous tables. When eaten warm, with butter, sugar, molasses, or treacle, it possesses a flavour that cannot be equalled by the griddle cake whatever. The buck-wheat flour, put up in small casks in Philadelphia, is the best that can be procured in America.

*Recipe*.—Mix the flour with cold water; put in a cup of yeast, and a little salt; set in a warm place over night. If it should be sour in the morning, put in a little carbonate of soda; fry them the same as any griddle cakes. Leave enough of the batter to leaven the next mess. To be eaten with butter, molasses, or sugar.

ELIHU BURRIT.

## The Poultry Yard.

### Fattening Poultry.

From an elaborate and excellent article in the last number of the *Scottish Journal of Agriculture*, we extract the following:—

"There may be said to be three principal modes of fattening, one of which is natural, allowing the fowls a greater or less degree of

liberty, and supplying as much nourishing food as may satisfy their appetite. This method is generally preferred among us, and many experienced poulterers affirm that they can obtain as good fowls in this way, as by any description of forced feeding. In France the prevailing impression is different. The two other methods are artificial; one of them consisting of the forced intermission at certain hours, of paste composed of farinaceous substances; the third, by causing the fowls to swallow by means of a funnel inserted into the mouth, farinaceous substances in a liquid state. This latter method, named *entonnage*, is so simple and rapid that it is thought likely to be generally adopted in preference to any other. The filler or funnel, made of white iron, should be of sufficient size to hold one meal, having a ring below the rim externally, for receiving the forefinger and thumb, and the orifice of the lower extremity cut aslant, the edges surrounded with a thin coating of India rubber, to prevent injury to the walls of the throat. The beverage which by this means is to be introduced, consists of barley meal, (not bruised barley) mixed up without knots in equal parts of milk and water. When all is ready, the fowl is seized by the wings near the shoulder, the head held forward between the knees, and grasped by the left hand, while the right hold the funnel, opens the beak, introduces the instrument into the gullet, and the proper quantity of the mixture is poured in. The quantity of the litter should be about the eighth part of a litre, but only half that quantity is given during the first three days. This dose must be given regularly three times in the four- and twenty hours, at intervals of eight hours. The boxes or frames containing the fowls, should be placed in a stable or other temperate place, protected from the currents of air, and they should be littered with straw, the litter frequently renewed, and every impurity removed. The duration of this treatment is from fifteen to twenty days; if it fails to be successful within that time, the subject should be withdrawn and otherwise disposed of.

"There is one important purpose which appears to us attainable more readily by forced feeding than in any other way, and which has not received the attention which it seems to merit. The great defect of the flesh of poultry as food, is its comparative want of flavour—it is somewhat insipid and tasteless. This deficiency was at once acknowledged, and endeavour to supply by eating along with it ham or tongue. Much therefore would be gained if we could impart to the flesh, otherwise so tender and nutritious, a greater degree of raciness and taste. Artificial feeding seems to present us with the means of accomplishing this; not only indeed, of giving it savor, but even the very degree and kind of flavor which may happen to be preferred. We might thus make game of our chickens, not in the ludicrous, but literal sense of the expres-



sion. We might give them the game flavor; might impart to them to piquancy of flesh found in various kinds of wild birds; and even possibly render it so odorous and fragrant as to surpass them all. The effect that the nature of the food has on the quality of the flesh of animals, is well known. That of the caper-caille has the sent of the fir-shoots on which the bird feeds; hares, inhabiting low wooded regions, have less flavour than such as live on mountains. Domestic rabbits are always insipid when compared to wild ones. Birds feeding on certain berries—those for example, of the juniper—acquire the perfume of their principal food. Such instances might easily be multiplied. They are sufficient to countenance the idea that, by mingling aromatic substances with the farinaceous aliments which form the basis of their food, we could vary at will the flavor of our poultry, when subjected to forced feeding. Substances for this purpose might be derived either from the mineral or vegetable kingdom; from the former cautiously. Flavored berries, such as the juniper, the aromatic buds of trees, the tops of labiate plants, such as thyme, lavender, odoriferous barks, &c., would form materials to work with. They would not require to be used but towards the close of the period of fattening, as a short treatment would be sufficient to perfume, at our wish the whole flesh of the animal. In this way the value of our most common fowls might be equally increased, and they might be brought to equal, and even surpass many kinds of game."

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Hunters, their Riders, and Breeders.

The majority of our hunting men of the present day will ride (with saddle and bridle) not less than fourteen stone; they are mostly strong, athletic, skillful horsemen, who must and will be carried wherever the hounds go. Need we wonder then, that they have considerable trouble in finding, and have to pay enormous prices for horses that can go and galloping freely, and jumping with such a burden on their backs, field after field, through a strongly enclosed country.

We pay as much or more attention to condition than ever we did. Our hounds are now bread with more speed than formerly. Foxes are frequently rattled into and worried in less than twenty minutes. Our hunters have plenty of speed and blood, but many of them lack that very essential quality in horses, "substance." My tryo will know that the faster the pace in the hunting field the greater will be the danger of accidents, when riding a horse under great weight. But if he must keep pace with the field, he must select a horse with some blood in his

viens; I may almost say that racing blood of the purest kind is essential in these days when fast runs are all the fashion. But where is the class of horse now bred which combines racing speed with substance sufficient to carry a fourteen or fifteen stone man, with perfect safety over a rasping country. The refuse of the racing studs are certainly not the class of animal adapted for a service of this kind; they have been bred solely for their own single quality of speed, they were never intended to carry a *man*—only *baby jockies*. The useful farmer's nag bred in some countries is strong enough to carry an elephant at his own pace, but that pace is not half fast enough for our modern breed of foxhounds and style of riding up to them. We want pure blood combined with great substance, to carry men of average weight with safety and credit. There are many such horses bred, and are to be procured, but the demand for them far exceeds the supply, and it is no uncommon thing for gentlemen to give from two to three hundred guineas for such an animal. Is it not, then, desirable for farmers to turn their attention to the production of such animals. Ours is the best horse breeding country in the world. We have, I am sure, both sires and dams sufficient, with every requisite quality, to form the nucleus of many more breeding studs.

If men can be found to select them, and capital to pay for them, and with judgment and energy to enter into the business with a will and determination to carry it out liberally, I doubt not that a princely fortune would be the result. We have many intelligent and scientific farmers, men who make but few mistakes in breeding cattle and sheep; why do not they pay more attention to the breeding of horses, which would sell as readily, and at more remunerative prices than any other kind of stock. It is as easy to produce a valuable horse as a weedy screw, by paying proper attention to the breed and quality of the progenitors. But many of our farmers breed from worn out mares, and any travelling stallion that happens to pass by the farm, irrespective of all combinations of make, shape, or quality; in many instances both sire and dam may be weak in the lions, touched in the wind, unsound in the hocks, or otherwise afflicted with disease common to most aged horses, and the produce, as may be expected, turns out weak, weedy, undersized foal, with long, bad-shaped legs and feet, like its sire, coarse in its head and general appearance like its dam, without the speed of the former, or the strength of the latter, but almost sure to be afflicted with more or less of the bad qualities of both. This most prevalent error is the cause of farmers paying more attention to the breeding and fattening of cattle, sheep, or pigs, than to the breeding of valuable horses; because after keeping their colts to the age of two, three, or four years, about twenty pounds is considered a fair value for the mongrel bred brutes.

Of all the mistakes and errors committed by small breeding farmers, there is none so prevalent or so fatal as to put a worn-out, halfbred mare to a second-rate, stilty racing stallion, with nothing to recommend him but the empty and worthless consideration of pedigree.

I have seen fine promising-looking colts thrown by old thorough-bred mares when nearly twenty years old, but this is only in the large breeding establishments, where, with rest and great care, the mare has been stronger at twenty years old than at five; this is a far different animal than one who has been worked till she can work no longer, until she is full of diseases and deformities, and then made use of for the reproduction of her species. Like begets its like, and we need not wonder when the breeders who pursue this line of policy are disappointed when the produce is sent to market, and that he gives up the idea of horse breeding in disgust.

Hunters should be bred from mares in the prime of life, while their functions are at their utmost vigour. They should be selected for their power, speed, endurance, and courage, perfectly free from defects, diseases, or deformity; and should be put to short-legged stallions, with deep ribs, powerful quarters, strong loins and shoulders, with sound, well-formed feet, and a smart, intelligent-looking head, well set on. If both the sire and dam be thorough-bred, so much the better; but thorough-bred horses with *substance* are becoming scarcer every year; indeed, how can they be otherwise when foals and yearlings are forced like a hot-house gardener forces his grapes and pine-apples—his owner may get the size and outward semblance, but none of the substance or quality of the fruit when grown in a natural state, and allowed its own time to ripen.

There was a time when children were worked (in the cotton factories of Manchester and its districts) until it was a rarity to see one grown to maturity in the same form that God made him; the result was the notorious transmission of their infirmities to their progeny. Then it was that the legislature interfered, and effectually prevented factory owners from working children until they were qualified to stand the fatigue, without the risk of deformity. I am no advocate for government interference with private enterprise; but I think the time will come when it will be forced, in self-defence, to interfere more seriously in the matter of horse-breeding than it has hitherto done. We have too much of the present quality of racing blood running through the veins of our troopers, which renders them constitutionally weak, and unfit to stand the rigour of a winter at the picket post, especially when existing upon the uncertain supply of forage which is incidental to all armies on a campaign in a strange and perhaps hostile country. The infusion of the racing blood of the present day into the veins of troop horses

also makes them too light for the purpose they are required; a light dragon will, with his kit, ride an average weight of eighteen stone. It is clear, then, that he requires a horse with substance, but it is also essential that troopers should be well-bred; and this class of horse, commonly called the seven-eights bred one, cannot be produced at the price given by government, indeed they cannot be produced at all except through the medium of worn out racing stallions and mongrel-bred mares. But if government could procure a number of brood mares and stallions of the class above recommended to form the nucleus of a breeding establishment, and by these means produce a number of horses and mares with good blood and substance, keeping them solely for breeding purposes, they might then without difficulty produce, by the aid of a cross with a lower, but stronger breed of horses, the finest cavalry horses that ever looked through a bridle.

I cannot but think that a national stake of very heavy amount, say four or five thousand pounds would have a most beneficial effect, no horses to start under five years old, to carry twelve or thirteen stone, a distance of four miles. We all know that notwithstanding the un-natural treatment to which the race-horse is now subjected, that he sometimes attains very fine proportions at six or seven years old. When sent to the stud he thickens, lets down his belly, and as far as regards looks, is quite a different animal to what he appeared during his racing career, and we may have some idea what a magnificent sight would be afforded by a field of such animals, if they were kept and prepared from their very foalhood for this one great event. What is to prevent such a race being established? I am convinced that it only wants starting in the most influential quarters, and the object would be gained; it would give a great impetus to horse-breeding by drawing the attention of capitalists to the subject, and awakening the understanding of those who up to this period breed nothing but weedy mongrels, not worth the litter they lie upon. The money would soon be subscribed by masters of hounds, members of hunts, and the plucky horse-proud gentlemen of our own tight little island, and the sister country, from whence I opine many of the candidates would come.

This great event might be run off at Ascot, —say in six years from the first of January, 1861; it should be open to all nations, and no allowance as to height, weight, or breed, should be made, but no horse should be allowed to start that has ever run in a race previously.

There would be one advantage to the breeding of horses for this event; that, if bred with judgment, the losers, of which there would be a great number, would find a ready market for them at remunerative prices, as animals bred with pretensions to win such an event would be worth



their cost price and a profit, for stud or general purposes; while the refuse of our present breed of racing stock is good for no purpose but to perpetuate their infirmities and constitutional weakness to our mixed breed of horses. Horses bred and reared for such an event as the one recommended are the class we most require for hunters and chargers; for which, I repeat, the demand is far greater than the supply.

In this enterprising country, where capital, soil, climate, and everything tends to encourage horse-breeders, this should not be. People hunt for pleasure; and there can be no pleasure in a fifteen or sixteen stone man riding a weedy animal, only qualified to carry twelve—which we often see in the hunting-field. We have horses sufficient to carry slim undergraduates or dashing cornets; these can be bought in plenty, and at a moderate price; but hunting men of middle age require a dash of pure blood and great substance in their horses before they can "hunt for pleasure." Let us yet hope to see the supply of such horses equal to the demand; but I need not say that this state of things can only be attained by the attention of farmers and breeders being more directed to the first and most essential principles of generation and reproduction, and their conviction that the production of good horses will pay them much better in a pecuniary sense than a mongrel-bred screw.—*Ballinasloe, in the Land.*

## THOROUGH-BRED STOCK FOR SALE

THE Subscriber has for sale DURHAM and GALLOWAY CATTLE, LEICESTER, COTSWOLD, and LINCOLNSHIRE SHEEP, Male and Female 10 Durham and Galloway Bull Calves—price from \$100 to \$200; 20 Shearling Rams, weighing from 230 to 235 lbs. each—Price from \$50 to \$100 each.

JOHN SNELL,

Edmonton P.O., C. W.

Four miles from Brampton Station G.T.R.

## EAST RIDING YORK

### Agricultural Society Fall Show,

AT WELLINGTON HOTEL GROUNDS, MARKHAM VILLAGE, 9th October, 1862.

All Entries to be made by the evening of the 8th, or to be peremptorily excluded.

A. BARKER,  
Secretary.

## THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

## THE PROVINCIAL EXHIBITION

OF THE

AGRICULTURAL ASSOCIATION OF UPPER CANADA,

WILL be held at the City of Toronto on the 23rd, 24th, 25th, and 26th September next.

Persons intending to exhibit will please take notice that the entries of articles in the respective classes must be made on or before the undermentioned dates:—

Horses, Cattle, Sheep, Swine, Poultry, on or before Saturday, August 16th.

Grain, Field Roots, and other Farm Products, Agricultural Implements, Machinery, Manufactures generally, Saturday, August 30th.

Horticultural Products, Ladies' Work, the Fine Arts, &c., Saturday, September 13th.

Prize Lists and Blank Forms for making the entries upon may be had of the Secretaries of all Agricultural Societies and Mechanics' Institutes throughout the Province.

HUGH C. THOMSON,

Secretary Board of Agriculture.

Toronto, August 1, 1862.

## GREAT CATALOGUE AUCTION SALE!

OF

Fruit and Ornamental Trees, &c., at Windsor Nurseries.

WILL be sold by Auction without reserve, on TUESDAY, 30th September next, at 10 o'clock, a. m., on the premises, The whole of the immense stock of WINDSOR NURSERIES, consisting of nearly everything in the Nursery line—including the finest stock of Dwarf Pear Trees, Dwarf and Standard Apple Trees, Roses, &c., at the West.

As the Proprietor is discontinuing the business, this will be found a rare chance for Nurserymen, Tree Agents, and Fruit Growers to lay in their stock at unprecedentedly low prices, as everything must be sold at whatever it may bring.

Catalogues will be ready ten days before the Sale, and will be sent with further particulars, on application to the subscriber.

Terms Cash.

JAMES DOUGALL.

Windsor, C. W., 18th Aug., 1862.

## FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,

Dover Court.

Toronto, Aug., 1861.

**VETERINARY SURGEON.**

**A**NDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,

Is Published on the first of every Month.

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**IMPROVED BERKSHIRE PIGS**  
**F**OR SALE by Mr. Denison, Dover Court, Toronto.  
Toronto, April, 1862.

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

Is published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

**Contents of this Number.**

|                                                                         | PAGE. |
|-------------------------------------------------------------------------|-------|
| The International Exhibition.....                                       | 481   |
| Letter from a Canadian in England. . .                                  | 482   |
| Farming Prospects in Northern Canada                                    | 484   |
| Galloway and Angus Cattle.....                                          | 485   |
| Rocky Mountain Silk Weed.....                                           | 486   |
| Agricultural Report, Hamilton Town-<br>ship .....                       | 488   |
| The Agricultural Census.....                                            | 491   |
| Steam Cultivation .....                                                 | 493   |
| British North American Colonies at the<br>International Exhibition..... | 495   |
| Our Forests—Their Importance. ....                                      | 497   |
| More Light Underground .....                                            | 499   |
| Advantages of Shading the Soil.....                                     | 501   |
| Grazing .....                                                           | 502   |
| How to Calculate the Value of Manures                                   | 504   |

AGRICULTURAL INTELLIGENCE :

|                                       |     |
|---------------------------------------|-----|
| Exhibitions this Autumn .....         | 505 |
| Great Sale of Southdowns at Balraham. | 505 |

HORTICULTURAL :

|                                   |     |
|-----------------------------------|-----|
| Criterion of fine Vegetables..... | 506 |
| Taste for Flowers.....            | 507 |

DOMESTIC :

|                                     |     |
|-------------------------------------|-----|
| Receipts for Using Indian Meal..... | 507 |
|-------------------------------------|-----|

THE POULTRY YARD :

|                         |     |
|-------------------------|-----|
| Fattening Poultry ..... | 508 |
|-------------------------|-----|

VETERINARY DEPARTMENT :

|                                          |     |
|------------------------------------------|-----|
| Hunters, Their Riders and Breeders . . . | 509 |
|------------------------------------------|-----|

|                            |     |
|----------------------------|-----|
| EDITORIAL NOTICES, &c..... | 511 |
|----------------------------|-----|

**A Thorough Bred 2 Year Old  
AYRSHIRE BULL**

**F**OR SALE, by Mr. Denison, Dover Court  
Toronto. April, 1862.

**FOR SALE.**

**A**LOT of thorough bred ESSEX Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
Canadian Agriculturist.

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, SEPTEMBER 1, 1862.

No. 17.

Irrigation.

*Editors of the Agriculturist.*—One object I have in writing to you is, to ask you (as you are supposed to know everything, and to be at all times ready to communicate that knowledge to every one), for information on the subject of irrigating grass land. I have about eight or ten acres of land so situated that a creek might be made to flow over it. It is rather heavy clay, and part of it has only 16 or 18 inches of clay till we come to the solid flag, limestone rock. The water in the creek is rather hard, in consequence, I suppose, of running upon the limestone; it is also full of saw-dust from a saw mill on the next lot up the creek. I never saw an irrigated meadow, and as far as my reading extends, it appears to be beneficial only to sandy or loamy soils, when well drained. Now, what I want to know is, would it be beneficial to irrigate such heavy land with such hard water? for I understand that soft water is best. Would the saw-dust be injurious? How near together should the drains be where I could not make them more than 16 or 18 inches deep? Has clay land ever been irrigated with advantage? What work is there published on irrigation and draining combined, that is adapted to Canada? If you could spare space in the *Agriculturist* to answer these questions, perhaps it might be useful to some of your readers, who may have land that could be irrigated, as well as to

Yours, &c.,  
J. W.

Cambray, August, 1862.

REMARKS.

Irrigation has been found from time immemorial to act more beneficially on light, porous soils than on stiff clays, in consequence of the water permeating the lighter soils more freely.

Clay lands, however, have been irrigated with advantage when this operation has been preceded by *under-draining*, which when combined with deep or sub-soil ploughing renders irrigation yet more advantageous. Our correspondent's subsoil being a limestone rock, we presume will readily admit the passage of water through its various interstices; if not, the benefits of irrigation on so shallow a surface soil would be problematical. Impure water is better for irrigation than pure, or rain water. All water found in springs, rivers or lakes is impure; that is, it contains earthy and saline substances in solution. Our correspondent need not therefore be doubtful about his *hard* water, as the hardness is owing to the presence of lime,—carbonate or sulphate,—substances that possess manuring qualities. The saw-dust in the stream would do no harm, unless in too large quantity, when it might interfere with the regular overflow of the water on the surface of the land. It is impossible to give advice about cutting the drains, without knowing how the surface to be irrigated lies, in relation to the stream which supplies the water. They should be deep enough to contain a sufficient quantity of water, and so placed both as to distance and inclination that the fluid can freely and uniformly flow over the whole surface,—Such a surface should therefore be flat, or at least uniformly inclined. If a field inclines different ways it makes it more difficult, sometimes impracticable to irrigate, in a perfect manner. The surface of many of the celebrated

water meadows in Europe, have been carefully prepared by art. Much, however, can be done on uneven surfaces by persons skilled in the practice of the art by what is technically called "catch work." We would advise our correspondent in the first instance to over-flow his land in as thorough and inexpensive manner as possible, and watch the results, of which we should be happy to be informed in due course. We know of no work embracing irrigation with draining that is readily accessible, but we may shortly turn our attention to the subject in the pages of the *Agriculturist*.

Ebs.

### The Grain Aphid.

EDITORS OF THE CANADIAN AGRICULTURIST,—Considering the office of the *Agriculturist* the best repository of facts relating to Agricultural matters in Canada West, I send you the result of my observation and experience of the insect now infesting our grain fields.

I observed it first on a field of oats of my own, last summer. They were early sown, and the damage done to them was small,—the grain was well filled before they appeared, but I had a bushel of Scotch or Fife wheat sown in the same field, late, which was promising well until the oats were cut, and very few insects on it; but immediately after the removal of the oats myriads of these insects attacked the wheat, and when harvested, the wheat only weighed about 45 lbs. per bushel.

They appeared last year to prefer oats to any other kind of grain, my grain bags could scarcely be forced to take in two bushels weight of oats, while the same bags the previous year easily held two and a-half bushels each. I attributed the loss to the insect. This year it commenced much earlier, attacking the leaves of the oats before the grain appeared, and now it takes wheat, oats or barley indiscriminately. There is also a difference in the insect itself this year—last year very few of them had wings,—this year they appear all to get wings in a few days after their appearance, certainly within one week. Some writers compare them to the common house or bed bug, but I see no resemblance between the two creatures in this part of the country, except the general color. The Aphid divested of its limbs, to the naked eye, resembles more the shape and size though not the color of the small or male Flea, also a bed infester.

Yours truly,

A. HAMILTON.

McNab, 16th Aug., 1862.

Fully one-half of the money value of rape and the best cotton seed cakes is obtained back again in the manure.

### Wool and its Prospects.

[The following article we take from the *Michigan Farmer*, and congratulate our contemporary on his re-appearance, after a short cessation, in a much improved form. The two numbers of the new series that have reached us bear evident marks of talent and industry, and the Journal under its improved management, in a splendid agricultural State like Michigan, must or at least ought, to command a large degree of success.—Ebs.]

From a survey, somewhat hasty, or the market, the state of public affairs, and of the other interests that have a bearing upon wool and its value, we incline to the opinion that wool is likely to advance in price than to fall below the extreme rates, that were current during the season of the clip. Why we think so, will be easily understood from the following statement of our reasons.

1. The stock of old wool in the hands of manufacturers and dealers, was far more thoroughly used up than we have known before for several years, at the time when the new clip was ready. The action of the new tariff during the past twelve months had a tendency to set the manufacturers all through the country at work under more favourable circumstances than they have had since 1846; then again, the demands of the Government for supplies for the commissariat of so large an army, with all its wear and tear, had a most important bearing on the consumption of the old stock—and this with an active demand for home consumption stimulated by a remarkable plenty of currency—these causes all serve to use up the stock of old wool. It is gone, therefore, and all that manufacturers can depend upon is this year's clip, a large portion of which, they are not likely to have, for the wool clip of Virginia, Kentucky, Missouri, Tennessee, must necessarily be light, that will seek a northern market, and hence a diminished aggregate supply.

2. The high price of cotton, must have an immense tendency to keep up the price of wool. Already cotton is worth nearly as much as wool, and the supply of cotton becomes lessened more and more, wool must of necessity, in a greater or lesser degree take its place. The demand for a supply of wool is likely to be very great before the next year's clip is ready, and we should not be surprised to note that it had gone up nearly a dollar a pound before first of next June.

3. If the army called into the field by the government consumed as supposed, nearly two-thirds of the wool clip of last year, we certainly have every reason to believe that now, that orders have been issued to double its numbers for the next nine months, the demand for sup-



plies of woolen goods for such an immense body of men, as nearly one million, will of itself create a consumption that will use up all the wool that has been produced in the wool growing states in less than six months, and then!

4. As yet no material change has taken place in the prices of wool in foreign countries, but exchange has advanced so that it is estimated that the high rates are equivalent to an advance in the prices of wool of from eight to ten per cent. But the tariff so discriminates, that our own growers must have a material advantage, while it lasts. We fear, however, that the wants of the country will become so pressing, that all the manufacturing interests will demand a revision or alteration of the duties on the raw material, so that a supply for home demands may be procured at rates that will permit a very great increase in the importation.

The above are the principal reasons we have for the belief, that wool is bound upon an upward trip for the next twelve months, and that we think that it would be perfectly safe for those who have clips on hand, to hold on for a reasonable time, at any rate, as it does seem possible at present, that there can be decline either in the demand or in the prices. Still, it must be borne in mind, that we are at what the people in Washington are pleased facetiously to call "War," and they have been playing at this game in a polite and politic way for the past twelve months. We are not able to predicate what may transpire, should they determine to make war in some other way, than the "make believe" system.

The wool circulars seem to talk very cautiously as to the prices. Walter Brown, of New York, in his August circular, indicates that an advance may be looked for—he says:

"The domestic Wool market during the month of July was extremely active, especially in the wool-growing districts, and the prices still farther advanced—the tendency still being upward. It is the opinion of many, that good wools will soon be worth 60c per pound, in the Eastern markets. The great advance in exchange, the high value of specie as compared with our rapidly increasing paper currency, must necessarily influence the prices of Wool, which is a direct representative of specie. The fact that cotton is selling at unprecedented rates, cannot fail to produce its effect on the Wool market. The new call for additional troops will, in due time, bring new and large orders for clothing. Manufacturers are also already doing a successful business, and under the present tariff, have before them the most brilliant prospects. Every thing seems to force wool into a high range of figures, and yet notwithstanding all these considerations, the future is in reality greatly obscured, and the immense uncertainties of war are oppressing the minds of the people to such an extent, that it may have a very modifying effect on business, and prevent the natural and full

operation of these apparently active causes."

The prices in the New York markets are quoted as follows, and show an advance during the month of 5 to 7 cents:

Choice selected Saxony fleece, 53 a 60c.  
Saxony fleece, 55 a 57c.  
Full-blood Merino fleece, 55 a 56c.  
Half and three quarter blood fleece, 53 a 55c.  
Native and quarter blood fleece, 51 a 52c.  
Common fleece, 50 a 52c.  
Canada fleece, 50 a 55c.

### Breeding and Rearing Pigs.

[A correspondent of the *American Agriculturist* gives the following as his experience in this important branch of farm management. Will not some of our *Canadian* farmers furnish us with *their experience* also? Eds.]

In selecting my breeding hogs I always pick out the best shaped, most thriving boar pig to keep over for a breeder. For a sow I select a healthy shoat, well shaped, but thin and lank, in preference to a fat and sleek one; my reasons for this are, that the lean sow will produce more pigs, and raise them better than one in high order—the sleek one converts all her food into fat and flesh for her own sides and back, while in the lean one it is converted into food for the young. This rule is applicable to all animals. A cow which shows every rib when in milk, will bring forth larger and better calves, and give more and better milk than the one which always looks fat enough for the slaughter. My experience fully sustains my theory. My mode of raising hogs which are intended to be kept over, is to have them pigged about the latter part of August, or first of September, and after allowing them to run with the sow from four to six weeks, confine them in a separate pen. When first taken from the sow they should be fed from six to eight times a day, or else they will fall off in flesh, and it will take them weeks to recruit. Their usual allowance at first should be about a pint of milk to each pig, and in order to facilitate the properly attending to them, the milk barrel should be kept standing very close to the pen, from which it can be dipped with a pail with very little trouble, being replenished night and morning with fresh skimmed milk from the dairy. The quantity of each pig should be gradually increased each day according to the growth of the pigs, until they have attained to the age of three or four months, when a regular allowance should be made them; and the number of times of feeding may be diminished. At this time of the pig's life a little grain fed night and morning, will not be thrown away upon him; a little oats or rye, if the pig is in a healthy condition, followed by a pint of corn, which may be subsequently increased to a quart. This addition of grain will tell amazing-

ly in the growth of the animal, as well as have a tendency to keep him in such a condition that when "fattening time" arrives he will be ready for the knife much sooner than a hog fed only on slops without the daily quota of corn, to say nothing of the saving of a good deal more corn than has been used up to this time in the feeding. The milk from the dairy, when weakened by the slops from the kitchen, should occasionally through the week be enriched by the addition of rye bran.

**Sty and Bedding.**—The pen in which hogs are kept should consist of two apartments—a covered and an uncovered one. An excellent manner in which to construct a pig-sty, is to erect a two-story frame building, having a part of the under story boarded off for a place in which to keep the slop barrel, reserving the rest for a dry pen for the hogs, and have a pen constructed outside, and communicating with this covered one. The feeding trough should be in the outside pen. In this manner, if the pigs are given a sufficiency of rye straw in the inside pen, and the outside one is kept well supplied with the butts of corn stalks, they will not only make an immense amount of manure, but will keep themselves white and clean, thus refuting the assertion of the filthiness which is continually flung at them. In the upper part of this pen should be kept litter for the bedding of these hogs; or a part of it may be partitioned off for a henney.

I have adopted what I consider a very good as well as an economical plan of getting the upper part of my hog building filled with good littering material. It is this: When hauling in my corn fodder I cut off about two feet of the hard dry butts, which the cattle cannot eat, and leave them bound into small bundles and stowed away in the upper portion of the hog house, to be used as required. These corn butts when thrown into the outside pen are so torn and trampled up that they are converted into good lasting manure, which has not its superior on the farm, and which would be almost entirely lost if fed to the cattle in the fields, etc.

**Fattening.**—When fattening time comes, I generally commence by feeding them the "nubbins," and after two or three weeks, follow them with shelled corn. This I always feed boiled, boiling in the morning what is required during the day, and at night what is necessary for the morning. Feeding thus, brings my work nearly all in daylight. In this way I can make my hogs fat enough for all practical purposes, by feeding them from fifteen to twenty bushels of corn, each, and in slaughtering at sixteen months old, they weigh from four to five hundred pounds. I never like them to exceed the latter figure in weight, for I have no fancy for this overgrown and spongy pork of forced hogs.

One plant of the wild parenip (*Pastinaca sativa*) gives the same as the above.

## Cultivating Mixed Varieties of Wheat.

Selected samples of distinct varieties of wheat are now generally cultivated in Scotland. It may be questioned however, if the practice has much to recommend it beyond securing a pure variety for sale or for re-sowing. At one time the wheat usually grown was a mixture of a number of varieties of white wheats, including velvet-eared, and occasionally bearded heads. They are districts in England and on the Continent, where a mixture is still preferred. In some instances in England, red and white wheats are grown mixed, from the belief that the produce of grain is on the whole more uniform, and larger, and the sample brings a higher price in the market, than when either the white or the red variety are grown separately. This is the general result in those localities where the wheat crop is liable to become affected with mildew. With more attention to the cultivation of wheat in Scotland, selection has been carried out, and the greater portion of the wheats in cultivation are true to their kinds. It is therefore important to ascertain whether, by cultivating genuine or unmixed varieties, the produce per acre is not impaired, and as a consequence the money return less, than when a mixture of varieties are grown. Several eminent physiologists state that a mixture of kinds of any of the seed-producing plants usually yield a larger amount of seeds; and this opinion is very general among farmers where the growing of mixtures of the cereals and leguminous plants are carried out. It is supposed physiologists that the different varieties spread their roots at different depths in the soil, and thus draw a larger amount of the constituents of plant life from the soil. Perhaps something is due to the difference of produce in the different varieties, arising from the character of the season, climate, and soil. There are several recorded experiments which support this belief, but more experiments are required to elucidate the question.—*North British Agriculturist*.

## The Atmosphere and the Soil

BY CUTHBERT W. JOHNSON, ESQ., F. R. S.

While the rain pours down upon our fields, as of late, in unusual quantities, our attention becomes more directed to the effect it produces on the soil, and to the good results of drainage. We have, indeed, more than one reason for cultivating such trains of thought: we are ever rewarded, in these studies, by not only the interesting knowledge we acquire, but by the profitable answers which nature so often returns to our inquiries.

It may, then, be practically useful, if, in this wet season, we commune together a little upon these things—if we glance at the origin of our copious rainfalls, and consider how much distant



countries unconsciously contribute, in this way, to each other's welfare—before we proceed to remark the results of some recent valuable observations on the effects produced by the presence of water, and the action of the atmosphere, in drained and undrained soil.

It is, indeed, as a writer in the *North British Review* recently remarks, only the breezes of the encircling air which flows above and around us, that makes the whole world kin. The carbonic acid with which to-day our breathing fills the air, to-morrow seeks its way round the world: the leaves of the date-trees which grow around the Falls of the Nile, will drink it in; it will add to the stature of the cedars of Lebanon; the cocoa-nuts of Tahiti, the palms and bananas of Japan, will change it into flowers. The oxygen we are breathing was distilled for us some time ago by the magnolias of the Susquehanna; and the great trees which skirt the Orinoco, and the Amazon, the giant rhododendrons of the Himalayas, the roses of Cachmere, the cinnamon-trees of Ceylon, the deep forests of Central America contributed to it. The rain we have seen descending so copiously was exhaled for us from the warm surface of the ocean—was thawed for us out of the icebergs which have watched for ages the polar star.

The amount of that rain, in Surrey (where the average fall is about 24 inches; it was only 17.94 inches in 1858, and 22.25 in 1857, was about 20 inches in the last six months of 1859, and has been about 29 inches to December 1, in 1860, as will be seen from the following table, which shows—

THE RAINFALL AT CROYDON, 250 FEET ABOVE THE LEVEL OF THE SEA, IN THE YEARS 1859-60.

|                 | 1859. | 1860.             |
|-----------------|-------|-------------------|
| January .....   | 0.89  | 2.45              |
| February .....  | 0.78  | 1.00              |
| March .....     | 1.06  | 1.88              |
| April .....     | 2.36  | 1.55              |
| May .....       | 2.74  | 3.05              |
| June .....      | 1.62  | 5.81              |
| July .....      | 4.69  | 2.65              |
| August .....    | 1.00  | 2.99              |
| September ..... | 4.90  | 3.00              |
| October .....   | 3.88  | 1.97              |
| November .....  | 2.65  | 2.75              |
| December .....  | 2.47  | to the 18th. 1.43 |

29.04

With such widely-differing depths of rain, we need hardly add, how very interesting to the farmer is the proportion of these varying amounts of rain-water which his land-drains have to conduct away! This has been carefully determined on different kinds of soil—as on the chalk formation of Hertfordshire, by Mr. Dickson and Mr. Parkes (*Jour. Roy. Ag. Soc.*, vol. v, p. 151; on the limestone formation of Yorkshire, by Mr. C. Charnock, *Ibid.*, vol. x., p. 516); and

on the London Basin clay and the gault, by Mr. J. B. Denton (*Ibid.*, vol. x., p. 273); and, in the course of these valuable observations, both Mr. Parkes and Mr. J. B. Denton had their attention drawn to several curious effects produced by the removal of the land-water on the temperature of the soil.

The rain-fall in Hertfordshire, during eight years, is given by Mr. Parkes in the following table in tons. By this record the farmer will see how much the relative evaporation and filtration of the rain-water varies at different seasons of the year, and, as might be reasonably concluded, its annual amount also; and he will note that, in practice, almost all the filtered portion must either be removed by drainage, or will remain as land-water, dissolving the saline matters, and in several other ways impairing the fertility of the soil:

| April to Sept., incl. |       | Oct. to March, incl. |       |
|-----------------------|-------|----------------------|-------|
|                       | Filt. |                      | Evap. |
| 1836 ..               | 212   | 1,023                | 330   |
| 1837 ..               | 10    | 982                  | 452   |
| 1838 ..               | 12    | 1,082                | 393   |
| 1839 ..               | 263   | 1,500                | 159   |
| 1840 ..               | —     | 980                  | 362   |
| 1841 ..               | —     | 1,544                | 269   |
| 1842 ..               | 131   | 1,099                | 387   |
| 1843 ..               | 100   | 1,822                | 538   |
| Mean                  | 91    | 1,192                | 360   |

Of the several injurious effects of leaving the soil soaking in water, the lowering of its temperature must be regarded as one of the chief. The different temperature of a drained and the adjoining undrained soil was ascertained by Mr. Parkes on another kind of land—viz., the deep peat of Chat Moss, in June, 1837 (*Ibid.*, vol. v., p. 141). He ascertained that, although the constant temperature of the *natural bog*, surcharged with water from 12 inches to 30 feet, was 46 deg., and the thermometer planted in the same substance at 7 inches deep constantly indicated 47 deg., yet that in a portion of the same bog, well drained and deeply *stirred*, at a depth of 31 inches, it indicated a maximum temperature of 48½ deg., having gradually gained 2½ deg.; and that in such well-prepared soils the action of the atmosphere is much more considerable and rapid than is commonly believed, is shown by the observation made during the same valuable experiments, that, although the temperature of the natural, unstirred soil at a depth of 7 inches, was only 46 deg., yet that the mean temperature during 36 observations of the *stirred and drained* soil was 10 deg. higher and that after a thunder-storm it rose to 66 deg. The following is the result of their observations:

|           | Temp. of Atmosphere in Shade. | Time of Observation. | Depth below Surface, in inches. |      |      |      |      |
|-----------|-------------------------------|----------------------|---------------------------------|------|------|------|------|
|           |                               |                      | 31                              | 25   | 19   | 13   | 7    |
| June 10.. | 70.0                          | 9 A.M.               | 48.10                           | 48.2 | 50.0 | 53.0 |      |
| 15..      | 60.4                          | 9 A.M.               | 47.25                           | 49.6 | 50.8 | 53.0 | 67.6 |
| 17..      | 67.0                          | 9 A.M.               | 48.0                            | 50.0 | 52.8 | 56.6 | 63.0 |

We have here, as Mr. Parkes observes, satisfactory evidence that the accession of heat was solely derived from meteorological agency—that is from action on the surface, and not from the substratum, as the latter possesses invariably a lower temperature, which must have tended to diminish, rather than to increase, the heat finally acquired by the worked bed.

It is evident, indeed, from these and other observations, that in the month of June rain-water carries down heat, and raises the temperature of of the subsoil; whilst the loss of heat by the strata nearer the surface is quickly restored by the sun's rays. And another important effect is also observable in all soils properly prepared to receive heat and water, and permit their descent—viz., that the transmission of accessions of heat downwards continues during the afternoon of the day, and throughout the night, whilst the superstrata (but chiefly from 7 inches upwards) are losing some amount of their heat by conduction upwards and radiation. Such is the influence of good and deep drainage and ploughing upon the temperature of the soils thus improved. But the benefit does not end there; others follow from those operations—advantages which were thus well described by the late Professor Johnston ("Chem.," p. 110): "Vegetable matter becomes of double value in a soil thus dried and filled with atmospheric air. When soaked in water, their vegetable matter decomposes very slowly, or produces acid compounds more or less unwholesome to the plant, and even exerts injurious chemical reactions upon the earthy and saline constituents of the soil. In the presence of the air, on the contrary, this vegetable compound decomposes rapidly; produces carbonic acid gas in large quantity, as well as other compounds on which the plant can live; and even renders the inorganic constituents of the soil more fitted to enter the roots, and thus to supply more rapidly what the several parts of the plants require."

Let us next refer to the limestone soils of Yorkshire. Here we have on record the observations of Mr. Charnock, of Holmfild, near Ferrybridge, (*Ibid* vol. x., p. 516.) This Journal was kept during the six years from 1842 to 1848. The following table gives a digest of the results obtained in inches:—

|                                                                                     | 1842. | 1843. | 1844. | 1845. | 1846. |
|-------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|
| The total amount of rainfall was.....                                               | 26.11 | 24.49 | 19.0  | 23.18 | 25.24 |
| The evaporation from the soil, when saturated with water was.....                   | 30.02 | 31.19 | 27.85 | 31.09 | 32.28 |
| Ditto when drained....                                                              | 21.55 | 20.11 | 15.40 | 23.26 | 18.30 |
| The filtration from the soil, through a drain three feet from the surface, was..... | 4.55  | 4.28  | 3.60  | 4.92  | 6.70  |

If we examine the clay soil drainage waters, and the effect of their removal from the soil, similar results are obtained.

Mr. J. B. Denton found the temperature of the drained soils, at Hinxworth, at a depth of

18 inches from the surface, was commonly two or three degrees higher than the surrounding atmosphere, and about two degrees higher than that of the undrained soils. One observation of Mr. Denton I have not elsewhere met with. He says, "A remarkable proof of the influence and penetration of atmospheric changes through the soil to the depth of the drains, is seen in the fact that all the outlets discharged an increased quantity of water on the 6th March and 22nd April without any fall of rain on the surface, it being observed on each occasion that a very considerable fall of the barometer had taken place within the previous twenty-four hours."

From the following table constructed by Mr. J. B. Denton, from the results obtained by him in the drainage of the Hinxworth estate of Mr. Catterbuck, several other useful facts may be gleaned. It shows the rainfall in inches, and in gallons per imperial acre, from Oct., 1, 1856, to May 31, 1857, and how many of these gallons of rain water found their way into the drains from the several outlets. In my abridgment of the tables of Mr. Denton I shall give only the quantities of water delivered from two drain outlets, viz., Nos. 6 and 15—the first delivering the water draining from fields composed of the lower chalk, mixed with clay, gravel, sand, mixed with gault; the last, gault clay, with lime infiltrated.

|                                                                    | Rainfall. |          | Discharge from Outlets. |                  |
|--------------------------------------------------------------------|-----------|----------|-------------------------|------------------|
|                                                                    | Inches.   | Gallons. | Gallons. No. 7.         | Gallons. No. 15. |
| October.....                                                       | 1.645     | 37,215   | 12,910                  | —                |
| November.....                                                      | 1.630     | 36,372   | 27,000                  | 503              |
| December.....                                                      | 1.235     | 27,935   | 30,135                  | 5,825            |
| January.....                                                       | 2.333     | 52,775   | 43,885                  | 31,805           |
| February.....                                                      | .192      | 4,345    | 27,300                  | 9,060            |
| March.....                                                         | .820      | 18,547   | 8,415                   | 2,310            |
| April.....                                                         | 1.440     | 32,566   | 6,698                   | 6,183            |
| May.....                                                           | .750      | 16,967   | 4,177                   | 3,418            |
| Total.....                                                         | 10.015    | 227,220  | 163,550                 | 59,931           |
| Difference between the rainfall and the discharge from drains..... |           |          | 66,670                  | 167,289          |
|                                                                    |           |          | 227,220                 | 227,220          |

The mode of draining both the mixed and clay soils of Hinxworth is thus described by Mr. Denton—

"The mixed open soils were drained by occasional and wide parallel drains (from 4 to 8 feet deep), sufficient to discharge the rainfall and relieve the pressure of subterranean water passing through the soil from the higher grounds to their natural outfalls, at a cost varying from £1 10s. to £3 10s. per acre. The drains in this description of soil were reduced to a minimum in number, on the principle that any excess of work beyond that sufficient to remove excess of wetness would be a waste of outlay; whereas in the gault clay soils—which were drained uniformly by a parallel arrangement of drains 25 and 27 feet apart, 4 feet deep, at a cost varying from £5 10s. to £6 10s. per acre—the reverse principle governed the operations, the number of drains being increased to a maximum consistent



with economy; the object being twofold—not only to remove excess of wetness, but to promote an uniform aeration of the mass of clay above the level of the drains, so as to counteract as much as possible its absorbent and retentive nature.

“The total net cost of draining the 800 acres was £3,357 10s, giving an average cost per acre of £4 4s.”

And the reporter had the satisfaction of adding at the close of his valuable paper that the Clay-land Farm had just been let, on terms securing a full return for the capital expended in draining, and other improvements.

The recorded comparative movement of the water in the mixed and the clay soils of Hinxworth are certainly not the least interesting portion of these observations. As might be reasonably expected, Mr. Denton tells us that the discharge from the mixed open soils was much more regular than from the clays. The quantity of water discharged by the comparatively few drains of the freest description of soil during the period of the experiments was 160,920 gallons per acre, out of 227,240 gallons which the rain-gauge showed fell upon every acre drained, while the quantity discharged from the numerous drains of the clays was only 59,936 gallons per acre.

The steady discharge of more than 1,000 gallons per acre per diem from the mixed open soils during the winter—when evaporation is so much less than during the summer—is a fact of considerable importance when considered in relation to the wide extent of similar land requiring drainage. It will be observed, too, that after the autumn rains had completely replenished the absorbent demands of the clays, a large proportion of any succeeding rain was immediately discharged by the under-drains. There was a fall of rain at Hinxworth in October, 1856, of 1.645, and in November of 1.630, equal together to a supply to the soil of 74,087 gallons, or 3.40 tons of water per acre. The drains just began to trickle on the 27th of November, after a fall of half an inch of rain (.540). The test holes in the land showed that the soil was rapidly feeding itself, and that the water-level was rising, but had not reached the level of the drains. On the 12th of December the outlets were running 160 gals. per diem. per acre, after frequent rains in the early part of the month, of less than a tenth of an inch per diem. On the 13th the rain-gauge showed a fall of .452 (nearly half an inch), and the outlets increased their discharge from 160 to 275 gallons per diem per acre. On the 9th of January, 1857, the outlets were running 125 gallons per diem. On the 10th the rain-gauge showed a fall of .542 (rather more than half an inch), and the discharge from the outlets was increased from 125 to 5,150 gallons per diem per acre. How important, adds the reporter, are these facts, in considering the effect

of extended underdrainage on the arterial channels of the country!

The estate of Hinxworth is thus described by Mr. Denton (*Journal Roy. Ag. Soc.*, vol. xx. p. 273)—“It lies at the bottom of the chalk escarpment of the London Basin, and covers a portion of the lower bed of chalk, the out-crop of the green-sand, and a portion of the gault of the green sand formation. In several parts a superficial deposit of drifted gravel and sand overlies the older beds. The green-sand separating the chalk from the gault is very thin, and if collected in a distinct layer, would not exceed three inches in depth in its thickest part. The gault has gained a siliceous character where it comes immediately in contact with the green sand. It has also imbibed a calcareous quality by an infiltration of the chalk through the green-sand into its bed; for a wide breadth, however, the gault is denuded, and there, although the green-sand is absent, a very considerable infiltration of lime has taken place, which I presume may be accounted for by the fact that the chalk escarpment rises in almost cliff-like shape immediately at the margin of the gault, and any submersion of the gault has necessarily imparted to it the character of its more prominent and overwhelming neighbor. The nature of the soil is ever of paramount importance in considering the results of any reported drainage operations.”

The following are the analyses of the soils of Hinxworth by Professor Way :

#### OF THE LOWER CHALK AND MIXED DRIFT.

|                                  |        |
|----------------------------------|--------|
| Moisture and organic matter..... | 3.27   |
| Sands and clays.....             | 24.37  |
| Silica soluble in acids.....     | 1.23   |
| Oxide of iron.....               | 1.14   |
| Phosphate of lime.....           | 0.92   |
| Sulphate of lime.....            | 0.76   |
| Carbonate of lime.....           | 68.31  |
|                                  | <hr/>  |
|                                  | 106.00 |

#### OF THE GAULT (AT 24 INCHES DEEP).

|                                  |        |
|----------------------------------|--------|
| Moisture and organic matter..... | 5.01   |
| Sands .....                      | 0.66   |
| Clay .....                       | 63.26  |
| Carbonate of lime.....           | 31.07  |
|                                  | <hr/>  |
|                                  | 100.00 |

#### OF THE GAULT (AT 42 INCHES DEEP.

|                                  |        |
|----------------------------------|--------|
| Moisture and organic matter..... | 4.28   |
| Sands .....                      | 0.34   |
| Clay .....                       | 62.97  |
| Carbonate of lime.....           | 32.41  |
|                                  | <hr/>  |
|                                  | 100.00 |

It is from such careful practical observations that the young farmer will derive the most useful information as a guide to his drainage operations. It is not, it is true, the landholders of the light-soil districts of our island that have to

encounter the expense of land drainage. The question is of but very inferior interest to the skilful agriculturists of the Norfolk sands, the Suffolk crag, and of the great southern chalk formation of Surrey, Hants, and Dorset; but it is of great and enduring importance to the farmers of our extensive clay lands.

It will, we may all very easily discern, be long of increasing importance to the cultivators of such retentive soils. It is to them, in fact, that we must now look for that supply of animal food needed to support a rapidly increasing population; and the greater the advances are made in converting such heavy-soil holdings into stock farms, the more desirable it becomes to render their drainage more complete—*Farmer's Magazine*.

## Agricultural Intelligence.

### Agricultural Exhibitions this Autumn.

#### PROVINCIAL AND STATE.

- Upper Canada, at Toronto, September 22nd—26th.
- Lower Canada, at Sherbrooke, September 17th, 18th, 19th.
- New Y. State, at Rochester, September 30 to October 3.
- Illinois State, at Peoria, Sept. 30 to Oct. 4.
- Ohio, at Cleveland, Sept. 16 to 19.
- Vermont, at Rutland, Sept. 9 to 12.

#### COUNTIES.

- Stormont, at Cornwall, Oct. 8th and 9th.
- North Simcoe, at Barrie, Oct. 1st.
- Brockville, at Brockville, Sept. 18th and 19th.
- South Simcoe, at Bradford, Oct. 2nd.
- Durham West, at Bowmanville, Oct. 9 and 10.
- North Lanark, at Almonte, Sept. 16th.
- Russell, at Osborne, Sept. 30.
- Peel, at Brampton, Sept. 17th and 18th.
- North Leeds & Grenville, at Frankville, Oct. 1.
- North Ontario, at Prince Albert, Oct. 7th.
- East York, at Markham Village, Oct. 9th.
- South Wellington, at Guelph, Oct. 10.
- North Wellington, at Fergus, Oct. 14.
- South Grenville, at Prescott, Oct. 8th and 9th.
- West Northumberland, at Grafton, Oct. 15.
- Addington, at Newburgh, Oct. 25.
- Dundas, at Morrisburgh, Oct. 2, 3.
- Niagara, at Niagara, Oct. 9.

#### TOWNSHIPS.

- Paslinch, at Aberfoyle, Oct. 8th.
- Hamilton Township, at Baltimore, Oct. 9.
- Barton and Glanford, at Ryckman's Corners Oct. 2nd.
- Camden, at Centreville, Oct. 18.
- Vaughan, at Burwick, Oct. 30.
- Norwich, at Otterville, Oct. 11.
- Portland, at Harrowsmith, Oct. 17th.

## The Royal Agricultural Society of Ireland.

The annual Exhibition of this national association was held in Limerick, August 6 and 7; and we are indebted to that excellent journal,—the *Irish Farmers' Gazette* for the following report, which will no doubt interest our readers generally:—

It is just sixteen years since the Royal Agricultural Society of Ireland held its annual Show at Limerick; and when we look back to that period, and open a volume of our journal which contains the record of the proceedings, our thoughts revert to the amazing changes which have taken place in this country since that record was written. The first pressure consequent on the appearance of the disease in the potato had been felt, and unmistakable symptoms were even at that season to be found, shadowing forth the fearful "coming events" which were to follow, though no one, probably, anticipated the full extent of the appalling calamities which actually ensued. Nevertheless, there were those present at the meeting who warned their auditors that a very serious peril hung over the country, and the urgent advice tendered by the writer of the report which appeared in the columns of the *Gazette* was to "employ the people," for "the poor man's crop was gone," gone indeed—"gone with a vengeance;" and those who had the power were assured that to give employment at that juncture would be found profitable to "themselves, the people, and the nation."

This is not the place, nor is it our intention to review the history of our country since the date of the former Royal Show at Limerick; but, occurring as it did just at the commencement of the second chapter of that sad history, it would have been almost impossible to avoid alluding to it, when we are now called upon to record the events which have taken place at the very next meeting of the same society held at the same place. And there are other recollections stirred up when we turn back to the report given in our fifth volume. The place which once knew many of those present at the meeting now knows them no more forever; and though might easily name several to whom this is applicable, we shall content ourselves with merely mentioning two individuals who were then present, whose opinions were listened to with the profoundest respect, and whose memory will be revered so long as British farming can command an historian. We allude to the late Professor Johnston and James Smith of Deanston, both of whom attended the Royal Show in '46, and in whom the agricultural motto, "Science with Practice," was so brilliantly represented. But, on the other hand, we have honoured names still amongst us who were also present at Limerick on the occasion to which we allude, and who took a prominent part in



proceedings; for, amongst the eloquent speakers at the society's council dinners and banquet, we find the names of Sir Robert Kane and of Professor Hodges, the latter as the representative of what was at that time only a promising "yearling"—the Chemico-Agricultural Society of Ulster; but which, thanks to the exertions and eminent scientific attainments of its representative, has long since reached an honoured and useful maturity.

But although space does not allow us to dilate on these and similar topics arising out of reminiscences of the former Limerick Royal Show, it may not be amiss to cast a hurried retrospective glance at some of the winning animals of that day, ere we pass on our description of those of the present time. For it was Mr. Mason Hopper's Belville—one of the best show bulls of of that or any period—with his small and beautiful set on head, his immensely broad back, his remarkably wide chest, and deep, very deep, brisket, which carried off the Purcell Cup and Medal, even as he carried off, in the same year, first prize at the Inverness meeting of the Highland and Agricultural Society, and at the Wakefield Show of the English Royal, crowning all triumphs, four years after, by winning, as the best bull of any age, at the Glasgow show of the Scotch Society, a £70 sweepstakes of silver-plate, which was most appropriately ornamented with his own medal. The Beau of Killerby—then the property of the Hon. A. F. Nugent—was second to Belville in '46; the other winning bulls in the different sections being Lord Dufferin's Daylight, Mr. Christy's King Ben, Mr. Nugent's Eyeglass—of the Bustle by Windle tribe—and Mr. M. Harford's Young Fairfax. In the cow class Mr. Nugent was the leading winner with Elspeth, Modesty—the progenitrix of the late Charleville Gwynne tribe—and Funny Eye, having also his Bundle and her daughter Bandbox commended. Rose de Meaux, which the late Mr. St. George Gray took home when a calf of a few days old from the Foxhall sale in his gig, gave him, amongst others, Louisa by Sir John Sinclair, and that heifer, whose name has since become so familiar, took the first prize for him in the yearling class, and Mr. Christy's very neat Vesper, as another good omen of the future success of the Fort Union short-horns, was commended by the judges of the day, Messrs. Torr, Dudgeon, and Minnett. Lord Riverston was there with his long-horns, whilst the Hon. Barry Yelton enjoyed a walk over with his Herefords. Lord Dufferin's Geordie, and Mr. Andrew Templeton's Miss Elizabeth, took the bull and cow prizes in the Ayrshires to Ballyleidy, and Mr. Seymour, with his Keillor descended polled Angus cattle, cleared all in that class. The winning Blesington Leicesters of modern show were not represented at Limerick in '46, because that well-known flock was not then in existence; but the very flock on which that of Blesington was s. on

afterwards founded—to wit, the flock belonging to the late Mr. Gerge Moore, of Kilbride—won no less than three out of the four prizes awarded to Leicesters; and for the information of those who have been lately reading in the *Gazette* the accounts given by Mr. Wilson and Mr. Gray, of the "Border Leicesters," and the very practical remarks on the same subject which those accounts have elicited from Mr. Thomas Robertson and his friend, Mr. Jones, we may state that Kilbride sheep were essentially Border Leicesters, carefully selected, by John Murray, from some of the very best Tweedside flocks, and, as the show records of that period attest, the Kilbride sheep were always very fortunate winners.

But we now turn from reminiscences of the past—from things as they were in 1846, to things as they are in 1862. And, although we did not find some of the classes, on Wednesday morning, quite so well filled as we have seen them at former shows of our Royal Agricultural Society, we cannot allow it to be said that there was anything like a failure. Several of the short-horn sections, indeed, presented almost a regular catalogue of winners at former shows, and where this was not the case, the entries, for the most part, showed they had come of winning blood; Booth blood of the best sort—thanks to Messrs. Barnes, Chaloner, and Richardson, those steadfast adherents of Warlabey—being a predominant feature. Failure in numbers there might be, but if so, and although we had it all to ourselves—no short-horns having come direct from the other side—still it was more a failure of "weeds" than of quality. Soubadar, Lord John Russell, Sir Colin, Little Wonder, King of Hearts, Victor Emmanuel, Mickey Free, Queen of Beauty 2nd, Rhoda, Evening, Recherche, Lady of Avenel, Pride of Adare, British Queen, Queen of Beauty 3rd, &c., all winners at one time or other, formed in themselves a rare collection of good things, and and much more than sufficient to give a high character to any show in the three kingdoms. We miss, indeed, the Ardferd Abbey "cracks" of the Spring Show, Florentine and Bride of Lammermuir, neither of which were entered for Limerick; and our American Cousin, or speaking according to Coates, the Hero of Thorndale, though also on his own ground, was, in like manner, absent. There were, doubtless, good reasons for the non-appearance or those deservedly high placed animals, but as we do not know what those reasons were we cannot tell our readers, and must rest content with regretting their absence on an occasion when there was such a creditable turn out of the best of the south and south-west.

The flooded fields which met the eye on every hand on the way down afford by no means consolatory prospects of comfort in the show-yards, and certain unpleasant recollections of the Crimean-like mud of Athlone and the incessant

down-pour of the first day of the Belfast Royal naturally arose in one's mind; but we were agreeably disappointed, for although we certainly experienced some very heavy showers, yet the ample shedding of the market place in which the live stock apartment was held, assisted by the nearly as roomy temporary sheds, afforded every possible comfort for the stock as well as of the public, when the latter were compelled to fly for shelter. An efficient local committee, aided by a most zealous and hard-working local secretary, Mr. William Lysaght, had done all that was possible for the accommodation of exhibitors; whilst we need scarcely say that Captain Thornhill was as courteous and obliging as we have ever found him, and Mr. Corrigan, in his capacity as clerk of the yard, just as active as he is when at home in Kildare-street. Of course, the show was honoured with the presence of his Excellency the Lord Lieutenant, who is ever a welcome visitor on such occasions. A large number of the constabulary were also there, chiefly, we dare say, for the purpose of supplying a guard of honour to his Excellency; but it must have looked rather strange in the eyes of English visitors to see fine, stalwart fellows of that force walking sentry, armed with rifles, over sheep pens, short-horned bulls, cocks and hens, and butter firkins; and the sentries themselves seemed to think it all an extremely rich joke, if we may judge from their very good humoured countenances when engaged in that special duty.

The banquet, as is usual on such occasions in Ireland, was numerously attended by many of the principal land-owners and farmers of the country. Notwithstanding the difficulties under which this portion of the United Kingdom at present labours in common with others, a hopeful and encouraging spirit seems to have pervaded the meeting. We make room for the speech of His Excellency the Lord Lieutenant, whose utterances on public occasions are always significant and valuable:—

His Excellency rose amid loud cheers and said—My Lord Clancarty, my lords and gentlemen, I return very sincere thanks to you for the honour you have done me in drinking my health with such kindness. I always feel on these occasions that I had better leave the details connected with the meeting which we are holding to those who must be more competent than myself, from their pursuits and knowledge, to give their weighty authority concerning them. I believe in the show of this year there is very much to approve and applaud, except, indeed, in point of weather (hear, hear). I believe, too, that with respect to the number of cattle exhibited, a county with which I am connected, the county of Yorkshire, may have had some share in diminishing the numbers exhibited on this occa-

sion, the show in that county, which has great attractions for all the north of England, being held in this very week. There can be no doubt that in point of quality there has been a most valuable exhibition of stock, and I believe it will be admitted on all sides that just praise is due to the produce of your dairy farms, and your sheepfolds, too. During all my earlier visits to the meetings of the Royal Agricultural Society of Ireland I have been enabled to use the almost unqualified language of congratulation and hopefulness. Seasons had been favorable, produce had been on the increase, and crime was greatly diminished. The Ireland of the present seems scarcely to be the same as the Ireland of the past, and there were hardly any limits to the glowing anticipations we might form respecting the Ireland of the future. In many points on this occasion I am compelled to take a soberer and more chastened view—especially with reference to one topic, which I cannot omit to mention, but having done which, I will at once dismiss—both because it is the most painful of all, and one which has only an indirect connection with the object of the present meeting. I allude to the reappearance of crime. Old crimes which we had fondly flattered ourselves had been nearly extinguished and well nigh forgotten, have shown their horrid front amongst our rural population. Even the soil of this county has been reddened with blood. Though in this county it has been happily avenged—perhaps “happily” was not the word to use—I will say rightfully avenged—(applause)—this has been brought about, under God, by the fearless and conscientious discharge of their duties by all persons concerned—by council, by judges, by jurors, the magistracy, and by the constabulary. In mentioning the last body, I must take this opportunity to say that I do not think that on all occasions they have been fairly treated. I admit that there may be modifications which it would be right to introduce, and to acknowledge the impossibility of their doing all that some times seems to be required of them—seeing into the inside of rooms at a great distance from them, and receiving information which nobody will give them (laughter); but know as I do how much they daily do and dare for the maintenance of order and for the safety of life, I must consider that some of the attacks which are occasionally levelled against them are scarcely just or generous (hear). I need not point out to you that agrarian crime, if suffered to remain unchecked, would prove a worse enemy to the progress of agriculture even in its strict and narrower sense than either blight, or drought, or rain, or storm, or the worst enmity of the seasons (laughter). Of the enmity of the seasons there has, no doubt, been of late no lack. From the year 1852 to 1858 there have been in Ireland a series of remarkably favourable seasons. Since 1858 we have suffered from a series entirely the reverse. In 1859 we suffered from the



drought. In 1860-61, and up to the sixth August, 1862, we are suffering from deluge (hear). I might call even as a witness into court that broad and noble stream which flows within this town, so formed by nature to adorn, defend, and enrich the district which it waters, but which of late years has certainly given somewhat of an overplus of its wealth of moisture (hear). Now, these fluctuations of the seasons we have always been liable to in Ireland, and always, I fear, must be. They are mainly owing to the geographical position of the country, which we cannot hope to shift or change (laughter). I am aware that fault has been found with me once and again for dwelling upon the superior adaptation of the country to purposes of pasture and the rearing of cattle, and so seeming by implication to discourage tillage and the growth of crops. Now, no one could refuse to give tillage and the growth of crops their proper opportunity and their proper sphere; but surely, it is the part of a prudent man to take things as they are, and to follow the indisputable law of nature (hear). It is undoubtedly true that for a late season or two there has been a material falling off in what may be termed the general agricultural income of the country; but it is as true, and can be proved from authentic documents, that this decrease has fallen upon tillage and crops, whereas the value of stock has actually increased. I am sure you will excuse me for pointing your attention to this subject, which does seem to me entitled to your most serious attention; and it appears to me to establish in controvertably that in Ireland stock is the most steady and permanent part of rural income (cheers). I think we should be quite wrong to consider that the increase of cattle necessarily leads to the decrease of tillage. Modern husbandry has introduced stall feeding—stall-feeding increases manure, which is the surest staple of tillage (hear); and I believe it to be true, notwithstanding the decrease for the last few years in the value of crops, still, that all the processes and methods of agriculture in Ireland are exhibiting continued improvement (hear). Much capital has been devoted to drainage, and whether we consider the character of the crops, the soil, or the climate, there is no doubt that agricultural speculation could not take a more beneficial direction. The late report of the Commissioners of Public Works shows that in Ireland on 200,000 acres thorough draining, in a great part subsoiling, have been carried into successful operation since 1848. The amount expended in the last few years was, in 1859, £30,000; in 1860, £32,000; in 1861, £36,000; and in the first half of the present year, £32,000. In the County of Limerick alone the gross expenditure contemplated and in progress under the last improvements has been £188,000, of which £9,000 has been for labourers' dwellings. This quota is above the average of the other Irish counties, and is always exceeded by Cork

and Kerry. Now, this process of drainage naturally gives room for the introduction of improved implements, such as we saw with pleasure at the show-yard to-day, by which, being enabled to conduct all the operations of agriculture more rapidly, we may render ourselves less dependant on climate or weather, or in the literal words of the old proverb, we may thus be enabled to "make hay when the sun shines" (cheers). I am aware to what disadvantage the cutting of hay and corn and the stacking of turf must be exposed in some of the rainy seasons with which we are so often visited, but I cannot help thinking that by a more vigilant and determined attention to such opportunities as present themselves, even in the most outward seasons, a great deal of that which is now lost might be made comparatively safe (cheers). I have admitted then, that there is certainly something of gloom in the circumstances which have of late surrounded us, but I feel sure that every lesson borrowed both from the past, the present, and the future warns us against giving way to despondency (hear, hear). Even now in many crops, and in many districts, there are manifest signs of progress and improvement (applause). I earnestly trust that fine autumn may give us a turning point in the character of the late seasons. There are some though I cannot pretend to dive into their mysteries, who, from magnetic and electrical objections, feel justified in assuming that they will be able to ascertain more accurately those general laws which regulate the character of the seasons and of the weather; but I trust that in any case the agriculturists of Ireland will profit by experience in the same way in which they so largely did after the disastrous period which intervened from 1845 to 1849. In the remarks which I have thus taken the liberty to address you, I have mainly confined myself, as I was bound to do, to the topics and prospects of Irish agriculture, but both within and without their range there has been of late no lack of disturbing causes. Europe, Asia, and, above all, America, have heaved and are heaving with convulsions. We have sustained one famine in Ireland; we are now suffering in some degree, though in a very mitigated degree, from deficient harvests. The wealthiest district of England seems now all but paralysed by the sudden withdrawal of its most vital element. The commerce of the world has altered his laws and its actions. Steam and railways have changed the whole condition of transmit. Such changes, so extensive—such shocks, so violent—defy all calculation; but they should not shake our confidence in Him who gives the sunshine as well as the storm, the fertilizing rain as well as the drought, manna, the milk and the honey, as well as the stony rock and the sandy desert—who from evil bringeth good, and in judgment remembers mercy (applause.)

### Yorkshire Agricultural Society.

The recent annual show of this renowned Society, held in the city of York, appears to have been attended by its usual success. The subjoined report, from the *Mark Lane Express*, will be found to contain much interesting information to our readers:

It was on the Wednesday that the short-horns—the very aristocrats of a Yorkshire show—riveted the gaze of their many admirers; and yet, so far as mere numbers went, there was no formidable array here. In fact, the very entries read rather like “running-off ties” than the original composition of open classes. And this was the general character of the York show of short-horns. It was running-off ties. In no class were the entries great, but nearly all the animals were amongst the very best of their breed, and the majority of them as well known as winners. Mr. Stratton, who acted with Mr. Drury and Mr. Thomson of Anlanby, told us it reminded him of his first visit to a York show, some twenty years since, when he saw Bracelet, and Necklace, and Duchess 34th, and Buttercup in the ring, with that famous bull, the Duke of Northumberland, to open the lists. But there were as famous bulls in the yard on Wednesday; and it is long since so generally good a class has been got together:—Royal Butterfly, a winner of the Royal at Canterbury, and of the Yorkshire at Pontefract—Skyrocket, Feversham's grand Leeds bull—a rare, deep great bull from Scotland called Van Tromp, and Victor Emmanuel, also from over the border, and both destined to earn distinction to-day. Then Mr. Robinson sent on his new purchase, the 2nd Duke of Airdrie, the first Duke in Essex, and with some notice even in Yorkshire. The neat Master Buttercup was to be named only in the next degree; and Mr. Wiley's white Sir Charles, with two or three more, completed a class out of which the judges soon selected those they ultimately named for either honours or notice. Their ultimate choice, Royal Butterfly, has worn wonderfully well, and walked away as light and airy and handsome as ever. He does not look near so big as he did at Canterbury, but is a blood-like animal, with nothing coarse or patchy about him. Never was a prize more fairly won; for Skyrocket, sadly disfigured with a large swelling on one of his knees, has visibly wasted, and only still preserves his fine noble outline. There were many fancied Mr. Home's bull would beat him, a long way as he was before the other two commendations. As it is, Van Tromp may succeed to a place, for Butterfly was objected to as having been first at Pontefract, where the Yorkshire meeting was held two years since; and it is even

said that Skyrocket may be disqualified from his having won at an associated show of the Yorkshire and another society, as held at Leeds last summer. Only half a dozen two-year-olds came into the ring, of which the Battersea Gamester was clearly the best, although with a bad rash disfiguring his clean white skin. Mr. Stratton had it more his own way for second with a wealthy beefy bull, but with little of the style or show of Master Frederick, whose beautiful wild, roving eye told immensely against the dull, sleepy expression of his rival. Mr. Fawkes' bull was deservedly commended; and then, over the yearlings, the Battersea awards became more bothered than ever. The *third* in London was the *first* at York; the *first* in London was the *second* at York; and the *second* in London was the *third* at York. But there is no doubt Whipper-in's travels have told on him, for we never saw him show so badly, and people were more inclined than ever to pull him to pieces “behind his back.” It will need all Mr. Tallant's talents, and they are of no common order, to get him in form for the sale, which is to be really genuine, and everything to go for what it will bring. Windsor Augustus, on the contrary, was very even and well covered, and the tenth Butterfly true in his points and fresh in his looks. The awards spoke well for Mr. Carr's herd, who not only bred the best of them, but had a yearling in his own name most deservedly commended. Standing very deep on a short leg, and with a capital twist, a certain thickness of horn rather detracted from Don Windsor's appearance; but even this is something of a warranty for masculine character. The easiest thing of the whole day's work was Mr. Robinson's clever calf placing himself over a rather middling class, with Lady Pigot's alone to be numbered anywhere near to him. Jericho, who has gone on well since Battersea, was sold at York previous to the award for a hundred to the Baron Nathusius, who takes him out to Prussia.

The short-horn cows and heifers were, if anything, more select. In the two senior lots of aged and three-year-olds with only five in each class, there were Mr. Eastwood's Rosette, Mr. Douglas's Maid of Athelstane, Mr. Booth's Queen of the Vale, Colonel Townley's Rose of Lancashire, Lord Feversham's Valetta, Mr. Booth's Queen of the Ocean, Lady Pigot's Pride of Southwick, Mr. Mitchell's Mistletoe, and Colonel Townley's Young Butterfly—nearly every one fit to be first. The judges, in fact, specially mentioned nine out of the ten, while they generally commended the classes of two-year-old and yearling heifers, with ten in the one and eleven in the other. It was thought that the London gold medal cow might have been down calving at Warla-



by; but Queen of the Ocean never looked better, and we are quite willing to admit that we liked her a deal more in York than in London. Rosette is getting coarse and vulgar behind, and Mistletoe has the same very visible failing; but the other cows were all wearing well and in a capital show condition; while amongst the younger heifers Mr. Douglas got the Queen placed to his liking at last. She has been beaten, however, again since Battersea, at Belford, by Mr. Wood's Bonny Belle, a very neat one, only commended by the Royal, and highly commended here; so that out of the three trials the Athelstane beauty has *just* the best of it. The latter, from the way she has been made up, threatens soon to become cowy, but for compactness of frame and fine points she is *now* certainly very admirable. Her second here was a wonderfully useful white of Mr. Atkinson's, only a little deficient in quality, while Lord Feversham's Cecilia, the Royal third, Lady Pigot's Victoria, and Roan Knight's Butterfly were included in the general compliment paid to the class. In the next, about the only mistake of the day occurred, where Lady Pigot's handsome Rosedale was outplaced for second by one of Mr. Singleton's, for some reason, which to the mere lookers-on was more or less inexplicable, and that almost warranted the bit of temper shown by her ladyship's herdsman when he indignantly threw away his high commendation. There was but a small lot of calves where Frederick's Farewell, wrongly entered amongst the older heifers, rather annoyingly for her competitors, was suffered to show in her proper place.

The following succinct and admirable rules, as published in the catalogue, are worthy of the attention of similar societies: "When the cows and heifers are certified to be in calf, the prizes awarded will not be paid until a certificate of their having had a live calf has been delivered to the secretary. The heifers in class 7 shall be certified to be one month past their bulling. The number of five calves that cows have had shall be certified. The bulls in class 1 shall be certified (at the time of entry) to be sires of live calves; and in classes 2 and 3, that cows are holding to them. In awarding these prizes, the judges will be instructed not to take into consideration the value to the butcher of the animals exhibited, but to decide according to their relative merits for the purpose of breeding." With the first of these conditions, by way of a warning, the Empress of Hindostan, though entered amongst the breeding cows was not sent. Surely this is a lesson of itself to such associations as the Northampton, where this fat beast took a prize.

At the dinner (H. S. Thompson, Esq., president of the society, in the chair),

In the course of the evening the chairman gave "Success to the Yorkshire Agricultural Society." This society had now been established since 1837. It was in this month in 1837 when the society first met in York for the purpose of organizing a Yorkshire Agricultural Society. Since that time, of the Council, which consisted of twenty-eight members, sixteen had died, and there were twelve remaining, and out of these twelve eight were still on the council, thus showing that the earlier promoters and supporters of this society had continued to give their support so long as health and strength would allow them. The society had existed for twenty-five years—a quarter of a century—and it would be interesting briefly to review their proceedings, and see what, in that time, they had really accomplished. Before saying what they had accomplished, he might say a few words on what they had not accomplished. They were young and enthusiastic as farmers when they formed that society. In the course of that time they had endeavoured to promote agricultural improvement in every form, but one of the things they had not been able to do, they expected they should have been able to do, was to raise the standard of produce either in the way of stock or crops. He had been a constant attender at the meetings of this society and others, and *he must give it as his unhesitating opinion that they had not raised their standard of perfection in the best animals or best crops beyond what they could do twenty five years ago*. He did not wish to be misunderstood. He would say unhesitatingly that the prize animals shown by Earl Spencer, the Booths, Mr. Bates, and others, were as good animals as were shown now by Mr. Booth, Mr. Fawkes, and others. He thought the prize animals were quite as good then as they are now. Well, then in reference to the crops. It was very common to grow five quarters an acre, and it was not unusual to grow six; and what more could be done at this day? If more was grown by any one, he hoped they would come and ask him to see it. He believed they had not raised their standard at all, either in cattle or crops, beyond those days, but they expected to do a great deal in that way. They had a little smattering of agricultural chemistry, and they thought if they knew the land was too rich down went the crop and injured the quality and quantity, and that they would be able to find out what to administer to grow large crops to the acre. What had they done to increase the produce per acre in roots on the best farms and in the best seasons? <sup>see</sup> He had a great friend he often used to go see, who told him he could grow 100 tons of swedes to the acre. He was afraid he was rather incredulous. His friend showed him

some very fine turnips, and he found some that would weigh a stone. It was quite true that it was so. He (the chairman) should say that on the average they would weigh eight or nine pounds; and he said at the time, "What as to the 100 tons per acre?" His friend said it was very easy to make out that there were 22,000 plants to the acre, and if they only weight seven pounds, that made seventy tons to the acre; and if they could only get an average of ten pounds, that was 100 tons to the acre. It seemed very easy, in that way. He asked his friend when he had got one hundred tons per acre if he would be kind enough to let him know. His friend afterwards said it was not that year, the fly had been so bad; another year he said the wire-worm had been destroying them; and a third year he said, owing to the confounded seedsmen, they could not come up well. His friend lived to a good old age, and without growing his 100 tons, or 50. He could not see they were able to grow more to the acre on highly farmed land in a good season than they did then. Had they done nothing? So far from that, he should say it had been proved by facts that there had been no period since the beginning of the world in which such real gradual agricultural improvements had been realized as within the last quarter of a century. They had not increased the maximum, but they had the average very much indeed. Good stock was much more diffused than it was, and it was much more rare to see bad stock. How had these very great improvements been effected? Very much by the change effected in our means of cultivation, and greatly to the improved intelligence of the farmers. During the period to which he had alluded, the whole machinery of the farms had been changed. When they first framed their prizes for this society, they were anxious to make them such as would promote agricultural improvement. What did they offer for the different classes of things? He was surprised to find that they offered £424 for stock, £80 for written reports, about £60 or £70 for miscellaneous things, and for implements, £30. Out of £600 they offered in prizes, £30 were offered for implements. That showed the appreciation of the comparative importance of stock and implements. This year they had offered £250 for implements, and the increase in the number exhibited had far exceeded the proportion of £250 to £30. They had seen the rise of steam machinery altogether. The first steam thrashing machine ever exhibited was at Hull, in 1841. It was the fourth show they held, and many people on that occasion were very careful how they went near that machine, as they thought it was dangerous to be in the hands of farmers. There was a great number

of smocky engines now in their show yard, and the wish was now to get near them whilst at work. Steam thrashing machines, he was happy to say, were now more common than horse thrashing machines. Look at the steam plough. Many present, no doubt had an opportunity of seeing the steam plough at work within the last few days. What was its position at the present moment? He should say the problem of the successful effectual cultivation of the land was solved. They could effectually cultivate the land by steam machinery. As to the question of economy, he thought the cost of the most economic application of that power to this purpose was making rapid progress. Year by year the expense of it, the wear and tear, and other expenses attending the application of steam power was being reduced, and in a few years it appeared likely that steam ploughs would be as common as steam thrashing machines. He did not say that steam ploughing was now in such a position as to render it advisable for farmers to introduce it upon their farms. Land, however, could effectually be ploughed by steam, and in a few years he thought it could economically as well as effectually be cultivated by steam. He felt it was only fair to ask who were the men who brought it to its present position. Steam ploughs did not make themselves, and they ought not to turn their backs on the men who had fought the battles, and brought the question to its present position. The two men who had borne the burnt of the battle were Messrs. Fowler & Smith. In proposing the toasts, he should beg leave to ask the company to drink their healths, and he would now say publicly that he thought they were exceedingly indebted to them. After referring to their perseverance, the chairman said he was happy to tell them that the manufacturers of Mr. Fowler's plough had, since the 1st of January, sent out forty-five complete sets of engines and apparatus, the great majority of which were in the hands of Englishmen. He would next allude to the importance of covering farmyards. He had tried it himself, and having found its great value, he had made one for a tenant at his express request. The greatly improved value of the manure was such, that whoever tried it would never be without it in future, and he felt perfectly satisfied it would improve the means of fertilizing the land fully twenty-five per cent. The cost was scarcely appreciable when they were making farmsteads, but if they had it to do entirely new it would cost about 5s. per square yard. His toast was "Success to the Yorkshire Agricultural Society." They had achieved, he thought, a considerable measure of success, and he thought a set of Englishmen never had a good cause in hand they did not make



answer. The cause they had in hand was one which was worthy the attention and the exertions of Englishmen, for it was no less than that of providing food and employment for the whole nation.

### Professor Cameron's Lecture.

The following is an abridged report from the *Leicester Express* of Dr. Cameron's interesting lecture which he delivered before the County, Kildare Agricultural Society, in Naas Town Hall, on the 29th of July last :

The lecturer commenced with a few introductory observations, in which he complimented the society on the prominent position which they occupied amongst the agricultural societies, and congratulated them on the important results which had attended their recent efforts to extinguish the sale of spurious and inferior manures in the county. He next defined the three great divisions into which all the objects of external nature were arranged—namely the mineral, the vegetable, and the animal kingdom. There are many thousands of bodies, possessing different properties, each distinguished by its attributes from all the others ; yet by the process of chemical analysis all these substances are resolvable into about 66 elementary or simple bodies—kinds of matter which cannot be resolved into simple forms ; that is, cannot be decomposed. Of these 66 bodies, one-half occur in very minute quantities ; and their functions in the economy of nature are totally unknown. Of the remaining elements a large proportion occurs in but comparatively small quantities, so that, after all, but little more than a dozen raw materials are employed by nature in building up its rich and varied products. The functions of plants were next described. These, said the lecturer, should be regarded as stationary mechanisms, designed by the Creator for the elaboration of lifeless mineral matter into organized structures, capable as being used as food for animals. Plants grow only when exposed to the influence of light and heat, and the various other subtle forces which reside, so to speak, in the sunbeam. These forces are expended during the growth of the plant, and in fact, the development of the vegetable substance is in an inverse ratio to their disappearance. Plants are, therefore not merely stores of organized matter, but also magazines of force. During their decomposition, or the reconversion of their elements into a mineral state, all the force (heat, light, &c.) expended on their production is again set free. It has been proved beyond doubt that matter is indestructible. It is also certain that force or motion is equally unannihilable. We may alter in a thousand ways the form of matter, but its weight cannot be

reduced. We may alter the nature of motion—we can convert magnetism into electricity, electricity into light, light into heat, and heat into motive power, but we cannot utterly destroy any one of these forces. Animals require food in order that they may be enabled to carry on those motions which chiefly constitute vitality. The animal is perfectly unable to organize mineral matter, the substances by which its body is repaired must be but little different in nature from the body itself. Chemical analysis has shown that there is scarcely any difference between those parts of plants consumed as food and the animal body ; so that the latter merely reorganizes the vegetable albumen into animal albumen, and the vegetable fat into animal fat. The constituents of food admit of arrangement into three classes—The nitrogenous, non-nitrogenous, and mineral. The nitrogenous substances are formed of oxygen, hydrogen, carbon, and nitrogen, with minute quantities of sulphur and phosphorus. They alone are employed in the production of lean flesh, or muscle, and the organic or combustible portion of the bones. Hence they are termed flesh-formers. The white of eggs, the curd of milk, the gluten of flour are flesh-formers. The non nitrogenous substances are formed of carbon, hydrogen, and (sometimes) oxygen. They embrace starch, sugar, oil, and the production of heat, and hence are termed heat-givers. The mineral matter is used principally in forming the bones. The lecturer here entered at great length into the subject of the origin of animal heat and motive power, and demonstrated that the greater part of the food taken was consumed in carrying on the processes which give rise to their development. The native of the Polar regions is obliged to use an enormous quantity of fatty food to maintain the temperature of his body, at 100 and even 140 degs. higher than of the air surrounding him. The native of the East Indies, for an opposite reason, uses but little food, and that of a watery kind, the evaporation of the fluid portion of which from his body keeps him cool. Thus, on the one hand, by the process of internal heating and on the other by internal refrigeration, the temperature of the body is maintained at the same point—nearly 100 degs. Fah. Whether the individual be at the tropics or at Nova Zembla, the laws which govern the life of man control with but slight modification that of his "subjects in creation." Animals use food in order to make up for the waste which their bodies are continuously undergoing, and also to maintain the heat which is essential to their healthy vitality. An animal in a constant state of activity will consume more food than another which is in one of quiescence. In cold weather an animal if exposed, will require a larger supply of heat-giving food than it will if kept in a warm place. A beast undergoing the fattening process should be placed in a darkened situation, allowed to be

perfectly quiet, and kept at as high a temperature as is compatible with its health. Under such circumstances the flesh stored by it will cost the feeder far less than if the conditions were of an opposite nature. That by far the greater portion of the animal's food is consumed in developing heat and motion is evident from the fact that an ox will eat  $1\frac{1}{2}$  cwt. of turnips and 5 lbs. or 6 lbs. of oil-cake per diem, and still will only increase in weight by a couple of pounds. The feeder will find it more economical to keep the animal warm, by burning cheap coal *outside* its body, than by burning costly oil or starch *within* it. The best kinds of beasts for fattening (though not for breeding from) are those with large lungs—narrow chested. In such animals, the respiratory process is feebly carried on, and the amount of matter consumed in producing heat is comparatively small. Neither playful or irritable animals should be selected; the quieter—in fact, the more stupid—the animal the greater is its tendency to fatness. The presence of several stout persons prevented him (the lecturer) from applying this principle to the superior animal—man. The food should be adapted to the age of the animal. Calves, and the young of every kind of animal, should be abundantly fed with assimilable food, which should also be highly nitrogenous. During the formation of the bones, the hide, and the hair, much nitrogen is required, because these parts contain a large proportion of that element, and but little fat. When the animal is fattening, it should also be supplied with easily digestible food, in which the fatty and starchy constituents preponderate. It was a mistake to suppose that even in these animals the lean predominated over the fat. The recent researches of Laws and Gilbert prove that in the carcase of a lean sheep there is 50 per cent. more fat than lean; in a fat sheep the proportion of fat to lean is as 4 to 1; the carcase of a moderately fat pig contains five times as much fat as lean. It would thus appear that the more fat-forming substances which the food of store animals contains the more valuable it is. In all probability a large proportion of the nitrogenous constituents of oil-cake and bean meal is passed through the animal's body unchanged, the oily matters being alone completely assimilated. In the early stages of fattening, coarse food, containing a large proportion of woody fibre, may be given, and the greater portion of it will be assimilated; but in the last stage of the process, only the most nutritious and easily digestible aliments should be given; for the tendency to the secretion of fat being then at a minimum, and the appetite of the animal being much impaired, it will only consume as much food as will enable it to discharge the necessary functions of life. If, however, the nutriment be of a very tempting kind, it will probably eat in excess, which will contribute to the increase of the animal's weight.

It is by careful attention to such points as these that the finishing of beasts for the butcher can only be economically accomplished. The half fattening of animals is easily enough effected; but the difficulties in the way of fully completing the process appear to be very great; for in Ireland it is seldom profitably accomplished. Perhaps, when the knowledge of the scientific principles upon which the economic feeding of stock depends is more widely diffused this state of things will be improved. The chemical composition of aliments is not alone to be depended upon as a complete indicator of their feeding value. At one time the value of a food substance was estimated by its amount of nitrogen; but that was a mistake. Many kinds of food, more especially young succulent plants, contain large proportions of their nitrogen in an almost mineral state—at all events, in a form not sufficiently organic to admit of its being assimilated by animals. Many substances, to which, according to analysis, possess a high feeding value are practically inferior to other substances of lower analytical value. Rape-cake contains far more nutritive matter than linseed cake; yet no feeder prefers the former to the latter. The causes of the inferiority of such substances as rape-cake and their remedy are important problems, the solution of which would be of great advantage to the farmer. Some of the causes are already known. For example, rape-cake contains in very small proportion a disagreeably flavoured substance, which causes animals to dislike it. By steaming the cake and adding a little molasses or other sweet or flavoured substance to it, the disagreeable flavour is removed, and even fattening animals will readily eat it when it is presented to them in this state. The addition of an equal weight of locust beans (dried and crushed) to rape-cake so completely disguises the strong flavour of the latter, that stock will not only eat it, but, what is of far more importance, thrive upon it. Dr. Cameron next dwelt at considerable length upon the necessity of attending to the mechanical constitution of the food. A great deal of the motive power of the horse is needlessly expended in the process of grinding his oats and hay. If a man were obliged after a hard day's toil to use his teeth in grinding all the hard grains of wheat required to make a loaf of bread, he would find the process anything but delightful or refreshing. There is no occasion to cook such soft food as turnips and mangels; but inferior, hard, washed out hay and other rubbishy kinds of food are best made use of in a chopped and cooked or fermented state. Such food should only be given to working animals or lean beasts. After expatiating for some time on the importance of the subject of his lecture, and suggesting to his hearers the carrying out of certain feeding experiments, the learned Doctor brought his lecture (which was delivered extemporaneously and



occupied nearly two hours to a close, amid warm applause. The Doctor having stated his willingness to answer questions, several were put to him by the chairman and others, and were satisfactorily replied to.

## Horticultural.

### Cultivation of Window Plants.

The cultivation of flowers in the windows of dwelling houses has been for years rapidly extending in European countries, and it is a source of pure domestic pleasure and rational improvement. In Canada the principal objection urged against the raising of plants in windows is the liability of their being frozen during the intense cold nights, which are certain to occur now and then during winter. This evil, however, can be avoided, or at least greatly mitigated by a little extra care and attention, and we are glad to find that flowers in windows are every year increasing. The following report, condensed from that excellent periodical, the *Gardener's Monthly*, of a recent meeting of the *Pennsylvania Horticultural Society* held in Philadelphia, will be found suggestive:—

Dr. Jack read an essay, detailing his experience in growing window plants, and setting forth his method, which has been quite successful. He said that the subject was one of interest to all who have a love for plants, and especially to those who have not the conveniences for greater indulgence.

The conditions most desired, and the attainment of which has proved the most difficult, are the application of an even heat, and the maintenance of a constant moisture. In order to protect his window plants from an atmosphere too dry, he has pursued the plan of enclosing a space inside of the windows, projecting a case into the room and giving it the form of a bay-window. This is indeed but a Wardian case, one side of which is composed of entire sash. The dimensions are, height, 5 feet 8 inches; width three feet seven inches (this being the size of the window frame), and depth two feet eight inches.

The accommodation of the plants is effected by a circular stage of 31 inches in diameter, revolving on a central stud. This form of stage permits a variety of arrangement, and allows access to all parts for the purpose of watering, etc. While this form of stage retains the moisture constantly rising from the soil

equally as well as the ordinary Wardian case, it is better supplied with light, and affords an opportunity for a much more tasteful display of plants. It is liable to great diminution of external air, by which means, in cold weather, the plants suffer for heat.

To secure a uniform and sufficient temperature, an opening is made on the top of the case for the entrance of warm air, and another in the bottom, for the exit of the cool, which falls in consequence of its greater specific gravity. By this means, the plants are perfectly protected from contact with cold air. The current of warm air entering the top would, however, naturally dissipate the necessary moisture. To avoid this, a net work of loose cotton thread is placed over the opening, one end being immersed in water. Capillary attraction causes the whole to be moistened, and the air, in passing over it, becomes saturated with water.

The effect of this method is shown in the better appearance of the plants, a greater evenness of temperature, and the constant marked presence of humidity. All this is accomplished without complication, and requires but little attention. The process is almost self-regulating, much like that in the Aquarium, which renders the latter of such interest.

To secure the condition of heat, the plants should be exposed not too directly to the rays of the sun. If possible, the case should be so placed as to have the light of an adjoining window thrown in its rear.

A communication from Mr. Walter Elder was read, in which the writer traced the history of window gardening, and presented some thoughts on the moral and pleasing nature of the practice. It was the simplest branch of gardening, and the first to interest the mind with a love of flowering plants; it is the parent of exotic floriculture. Working people in large cities, who had not a foot of ground, made gardens upon the house-tops, and now Paris and other European cities are noted for them.

The French excel in balcony gardens.—Some window gardening is perhaps more universal among the working classes in Scotland than in any other country. It is in every house. The pious, peaceful, and moral nature of the people attaches them to home, and creates in them a desire to beautify it. The writer thought that the people of Philadelphia showed, several years ago, more taste for this branch of floriculture than now.

The communication closed with an allusion to the soothing influence of the culture of flowers on the mind. There was never a more propitious time for the culture of window plants than now, when the number of flowers subject to such treatment is greatly increased.

### Late Grafting.

It is generally supposed that grafting must be done early in the spring, or it will not succeed; the rule is to graft before vegetation has begun. We have at various times practiced grafting up to the beginning of the second week in June, and with pretty uniform success. The chief difficulty to contend with is to keep the grafts from drying up on the one hand, or to prevent them from growing. When an ice house is at hand, the difficulty is somewhat under control. Early in the season we received valuable grafts from Mr. Wilder, Dr. Brinkle, and others. Our purpose was to set them at once; but absence and other causes made it quite impossible, and they remained in the cellar, covered with sand, till the 28th of May, when they were put in, some of them quite dry and somewhat shriveled. They were cut into lengths of three or four inches, and most of them inserted by the common mode of split grafting. With some, however, the usual T cut for budding was made in the bark, the graft cut sloping at the end, inserted under the bark, and secured by tying. All were thinly coated with grafting wax. Upwards of fifty grafts (apples and pears) were put in, and, with one single exception, are growing as finely as could be wished. The exception is a graft of two-year old wood, and is breaking rather feebly, which was to be expected. We call attention to this late grafting, not as a remarkable novelty, but that our readers may know that late grafting may be successfully performed. Valuable grafts are sometimes thrown away, because it is supposed to be too late to put them in. In regard to the ripening of the wood, we have never had a late graft winter killed. There is no doubt a limit beyond which we cannot go; but that limit we have not yet ascertained. The grafts put in by the T cut are growing quite as well as those put in the split. The T cut is more rapidly performed, but neither process requires much time.—*Horticulturist*.

**HOLLYHOCKS.**—To those lovers of flowers who object to the hollyhock on account of the height to which the flower stem rises, we would suggest a remedy. Instead of one, two or three spikes, encourage four, five, or even six, to rise, and when they have reached an approved height, cut their tops off, and the habit of the plant will be entirely altered. If one spike is fixed in the centre, and left taller than those which surround it, the effect is highly pleasing. Beyond this, there are many varieties naturally of a dwarf or bushy habit. Most of the leading modern kinds commence the formation of flower buds at about two feet from the ground.—*W. Paul*.

**GROWING THE TOMATO.**—One would suppose that at this late day we know pretty much all about cultivating the tomato; but it seems that we do not, inasmuch as we daily see recommendations as to the best method of getting the most fruit. Some people train the vines over the most elaborate tressel-work or frames, at no little expense; others trellis them; others stick them with brush about the size or a little larger than that used for peas; others simply throw down brush for them to run over; and others allow the vines to creep over the ground without any support, only previously mulching the ground well with grass or straw.

We have tried every mode herein mentioned, and we have found that whether the plants are stuck, brushed, or allowed to run unsupported over the ground the yield is about the same. Frames and trellises are not so productive. We prefer the sticking process. It produces full as great a crop as any other mode; and if the brush is firmly inserted in the ground, it admits of passing between the rows to pick the fruit. When the vines are allowed to run over the ground unsupported, however much the ground may be mulched, the flavor of the tomato is more or less extracted by the natural attraction of the soil, by which the fruit is rendered almost worthless; besides the vines are all in a mass, and to get at the fruit is inconvenient to the picker and injurious to the crop.—*German-town Telegraph*.

### The Dairy.

#### Rearing Calves on Milk and Linseed Meal.

No doubt but the best and most proper food for the calf is its own dam's milk; for it is a true food, in which the components of nutrition are so nicely balanced by the all-wise and beneficent Creator as to set at naught all human compositions; but it is of so much value for human consumption, that it becomes necessary to economise it, and make imitations of it, though at a very humble distance; and thus it is that science comes to our aid. Professor Johnston says, in his "Lectures on Agricultural Chemistry," that "while the calf is young, during the first two or three weeks, its bones and muscles chiefly grow. It requires the materials of these therefore, more than fat, and hence half the milk it gets at first may be skimmed, and a little bean meal may be mixed with it to add more of the casein or curd, out of which the muscles are formed. The costive effects of the bean meal are to be guarded against by occasional medicine if required. In the next stage more fat is necessary; and in the third week,



at latest, full milk should be given, and more milk than the mother supplies if the calf requires it; or, instead of the cream, a less costly kind of fat may be used. Oilcake finely crushed, or linseed-meal, or even linseed oil, may supply at a cheap rate the fat which in form of cream, sells for much money; and instead of additional milk, bean-meal in large quantities may be tried and if cautiously and skilfully used, the best effects on the size of the calf and firmness of the veal may be anticipated."

The scientific note from Professor Johnston has engaged the attention of many stockmasters in Ireland, and among the rest, Mr. C. Beamish, of Cork, who adopted it and brought it to a regular system on an extensive scale. His formula for compounding the mucilage is as follows: thirty quarts of boiling water are poured on three quarts of linseed-meal and four quarts of bean-meal. It is then covered up close; and in twenty-four hours added to thirty-one quarts of boiling water, then put on the fire, pouring it in slowly, and stirring it constantly to prevent lumps, with a perforated wooden paddle, so as to produce perfect incorporation. After boiling thirty minutes, the prepared mucilage or gruel is put for use, and should be given blood or lukewarm to the calves, mixing it in small quantities at first with milk, say one-fourth mucilage with three-fourths milk, progressively increasing it, so that by the end of a fortnight it will be in equal parts: by the end of the third week, one and a-half mucilage to one part milk; by the end of the fourth week the mucilage may be given in double the quantity of milk, and skim milk substituted for new milk; and by the end of the sixth week, the mucilage will be gradually increased in the proportion of two and a-half to one of milk; and from that on till the tenth week the milk may be gradually reduced, so that by that time they may be fed wholly on mucilage till they are fifteen or sixteen weeks old, when they may be weaned.

During all this time, if too early in the season to put out the calves, they should be comfortably housed, well ventilated, and kept perfectly sweet and clean; a little sweet hay tied in bundles and suspended, so that they may play with it and learn to nibble and eat it; and a little pounded chalk, mixed with salt, given in troughs to lick at pleasure, which prevents acidity in the stomach, and the due formation of cud. Small lumps of linseed cake should be given in other troughs, which they will soon learn to suck, if a little pains are taken to put a bit in their mouths after they have taken in their mouths after they have taken their meals of milk and mucilage. When housed it will be advisable to have a separate pen for each calf of sufficient size to walk about, so that they do not get into the habit of sucking each other and swallowing the air, which, united with the curd by the regurgitating process going on in the stomach, forms round balls which are indigesti-

ble, and is the fertile cause of the death of many promising animals. The following scale of quantity of milk or milk and mucilage combined for each calf may be useful, but should be altered according to circumstances: For the first week the calf may get from three or four quarts daily; for the second week, four to five quarts; fifth and sixth weeks, eight to ten quarts; six to eight weeks, ten to twelve quarts per day, and so on, increasing the quantity about one quart per week per calf till weaning time.

Some parties do not give so much liquid food per day, but make it up by giving them finely-cut roots, dry oatmeal, &c.; but the animals are much too young for such food, though they may get the minced roots so as to train them into their use. Hay tea is an admirable thing also to mix with the mucilage and milk, as it contains a large amount of nutriment in a soluble form.

In the summer time the calves may be left out on the grass, both day and night, in a fort night after they are calved (and fed as already described they should be in the house); but a warm sheltered paddock should be provided for them, and in wet weather they should have access to a covered shed — *Irish Farmer's Gazette*.

---

## The Poultry Yard.

---

### A Profitable Hennerly.

Mr. Wingate's poultry house and yard are well planned—in winter the hens have a warm and commodious apartment, and in summer they are given free use of the yard, but never allowed out of it. Fresh water is kept by them all the time. The apartment in which the hens roost is about ten feet square, and it is also provided with several box nests. There are two perches for the hens to roost upon, about eighteen inches apart, and under them is a broad shelf for the purpose of catching the droppings. This is supplied daily with loam, ashes, stable-dressing, &c., and is scraped off each morning. Mr. Wingate finds this a most efficient fertilizer, applying it to his grapevines and also to other garden crops, with the best results. Adjoining this room is a larger one, which is used for the winter quarters of the poultry, connected with the other by a sliding door for the use of the poultry. Each fall Mr. W. collects from the streets about two cart loads of fallen leaves, and places them upon the floor of this room; consequently the hens have a warm, dry, and comfortable chance all winter. But this is not all; the leaves thus used become partially rotted, and with the droppings of the poultry, make a considerable pile of excellent dressing. Farmers and others who keep hens, and allow them

to freeze to death upon the cold, damp manure heap of the shed, should make a note of this.

In feeding his hens, Mr. W. makes use of the waste from the kitchen, as he keeps no pig. The potatoes, &c. are mashed up and mixed with oat-meal; and besides this, corn is given them in sufficient amount to keep them in good condition. He also uses what bones accumulate from the meat used in the family. For the purpose of crushing these up fine he has a substantial block with the top dug out in the form a bowl, into which the bones are placed, and with an axe reduced to a form readily eaten by the hens. At present Mr. W. has twenty-four hens and a crower. He keeps the hens until they are three years old, then sells them in the fall, after the best season of laying is over. To replenish this number, he buys pullets of some good laying breed.

Mr. W. keeps a correct account of the number of eggs laid by his hens. The number of eggs laid each day are set down, and each month added up. The account of eggs laid last year, (1861) by 23 hens, as follows:

|                    |         |                     |           |
|--------------------|---------|---------------------|-----------|
| January . . . . .  | 48 Eggs | July . . . . .      | 345 Eggs. |
| February . . . . . | 169 "   | August . . . . .    | 309 "     |
| March . . . . .    | 357 "   | September . . . . . | 241 "     |
| April . . . . .    | 393 "   | October . . . . .   | 95 "      |
| May . . . . .      | 473 "   | November . . . . .  | 18 "      |
| June . . . . .     | 403 "   | December . . . . .  | 18 "      |

In other words, 239 dozens of eggs, which at 15 cents per dozen—the average price during the year—would amount to \$35.85. The cost of keeping the hens for a year, Mr. W. considers to be \$8, as the waste from the house he does not reckon at full value. This is a profitable hen-nery, and is a good paying branch of Mr. Wingate's establishment.—*Maine Farmer.*

**LICE IN FOWLS**—Poultry-houses floored with beaten or well-rammed clay are said to be less infected with lice than houses which have sandy floors. In this, however, as in other departments of stock keeping, cleanliness is, after all, the best preventive. Cleanliness of the house and cleanliness of the hen. To secure the latter, let a plentiful supply of pure fresh water be given to them; and a dust bath should form an essential part of the furniture of a hen-house. A correspondent of a colonial paper suggests that to exterminate lice in fowls, they should be fed for several days on coarse meal wet with water, and sulphur mixed with it; the nests being at the same time thoroughly cleansed, the house fumigated with tobacco, and all the roots and wood-work white-washed with fresh lime mixed with sulphur or tobacco.—*Mark Lane Express.*

**HENS EATING EGGS.**—A writer in the *London Field*, says: "That hens eating their eggs is often owing to the form of the nest, and suggests that the proper form is that of a

plate; shallow, that she may not have to jump down on the eggs, and flat on the bottom, so that when she treads on them they will roll aside, and let her feet slip easily between them. She can then pass her bill among them, as she tucks them up under her, and shuffles them together with her wing without hurting them. If on the contrary, the nest is made in the form of a basin, the eggs press against each other, and are liable to be crushed by her efforts to put her feet between them, or to alter their position with her beak and wings. When an egg is broken most hens will eat it, and as hatching approaches, the eggs become more brittle; and in a deep or badly formed nest the chicks are very apt to be crushed and killed between the other eggs, by the movements of the hen."

### Production of Poultry and its Produce.

There was a time—and compared with the age of a nation and civilization, not so very long since—when to enjoy the luxury of a salad or a cauliflower it was necessary for the wealthy and the titled, and even for the sovereign herself, to send an express to the continent in order to obtain it. Doubtless, the farmers of that day thought it beneath the dignity of their cloth to devote any portion of their time, attention, or land to so insignificant and ignoble a species of produce. It might do very well for the poor people of France and the Low Countries to fiddle themselves about such trifling productions, but an English farmer had something more worthy of his attention to look after than pot-herbs and lettuces, with their accompaniments. But the day is gone by, and these things are cultivated in old England with as much success and to as great an extent as on the continent; and any farmer has now only to step out at his back door into the kitchen garden attached to every house in the country to supply himself with whatever of culinary or other vegetables he delights in.

There are, however, still articles of daily consumption, the production of which in England is far from being commensurate with the consumption or with the capabilities of the soil, and for a large supply of which we are indebted to our neighbours, the French and Belgians, to an extent that will appear apocryphal to those who are not initiated into the history and mystery of the Board of Trade returns. We refer to poultry and its produce, in the raising of which the British farmers are far behind their neighbours.

A stimulus, it is true, has been given to this branch of rural economy the last ten years, but at present the "poultry mania," as it is justly termed, is chiefly confined to amateur breeders. In order to extend and diffuse the "poultry mania" amongst the agricultural classes, or rather



to induce them to pay greater attention to the business of rearing and fattening fowls for the market, we will place before them the returns of the Board of Trade of the quantity of eggs and poultry imported, the former for the last ten years, whilst the latter since the reduction of the duty not being inserted in the returns, we can only give them for a limited period.

With regard to eggs, then, the following are the average numbers per annum imported since 1828, taking every five years:

| <i>Average Annual Import of Eggs from</i> |             |
|-------------------------------------------|-------------|
| 1828 to 1832 inclusive.. ..               | 61,431,062  |
| 1833 to 1838 .. ..                        | 68,493,516  |
| 1838 to 1842 .. ..                        | 91,393,632  |
| 1843 to 1847 .. ..                        | 72,690,051  |
| 1848 to 1852 .. ..                        | 103,120,221 |
| 1853 to 1857 .. ..                        | 147,342,219 |
| 1858 to 1861 .. ..                        | 163,581,140 |

There has, therefore, been a gradual increase in the supply ever since 1828, with the exception of the fourth average; but to show the enormous extent which it has now reached, we may state that whereas in 1844 the quantity imported was 70,415,931, in 1861 it reached 203,313,360. And, if we reckon the cost price of these at 4d per doz, their value is £282,379 10s, upwards of a quarter million sterling for a species of produce that could with the greatest ease be raised at home. With regard to the poultry imported there is reason to believe that it has increased in an equal proportion. The returns have not noticed the same since 1856, but for that and the two previous years the imports were in value as follows:

|            |         |
|------------|---------|
| 1854 .. .. | £38,876 |
| 1855 .. .. | 42,075  |
| 1856 .. .. | 48,230  |

So that the increase was about 25 per cent. on those three years, and has probably been quite in an equal proportion since, making up an aggregate amount for 1861 of fully £360,000 for poultry and eggs.

The number of eggs sent from France is not so surprising, when we take into account that every farmer has his *basse-cule*, or fowl yard, the produce of which constitutes no inconsiderable item in the accounts of the year. M. de Livergne, in comparing the produce of the United Kingdom with that of France, states that while the poultry of the former amounts to only twenty million francs (£800,000,) that of the latter country amounts to two hundred million francs (or £8,000,000 sterling); there is, therefore, a large margin left from the home consumption to be exported.

That the farmers would find it to their interest to cultivate more sedulously this branch of rural economy there cannot be a doubt. In London there is always a demand. Like all other provisions, there are different periods for different prices, and here it is that poultry shows

do much good in offering premiums for early maturity. If those who have facilities for rearing chickens would do so in January, or even in December, and bring them to market in a fat state in April, May, and June, they cannot fail to receive a remunerating price. Three pounds per dozen is a common value for fowls four months old. At this season, less than two guineas would be ridiculously low.

There is a collateral advantage to the farmer in keeping a large stock of fowls. The inferior grain could then be profitably consumed on the farm at a remunerating price, instead of being subject to the fluctuations of the market. Nor is the dung that would be made an object of no account. It is certain that fowls' dung is exceedingly valuable, and where large numbers are kept a considerable quantity would be made in a year. For the present we leave the subject for the consideration of those whom it concerns, but may probably recur to it on some future occasion.—*Mark-lane Express.*

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Umbilical Hernia.

The protrusion of any portion of bowel through the umbilicus or navel, forming a tumor at that part is what is understood by umbilical hernia. The navel of the young animal prior to birth is open for the purpose of giving passage to the umbilical cord or naval string; this opening after birth becomes closed, and the vessel of the cord obliterated.

It sometimes happens that closure of the aperture does not take place, and a portion of omentum or intestine becomes protruded, constituting the hernia in question. However, in other cases it arises from blows or from the animal running and leaping, &c. The following is such a case.

About the end of July last, I was requested by a gentleman of this city to examine a thoroughbred filly, about one year old, that was affected with umbilical hernia. The tumor was about half as large as a man's fist, and increasing in size. The owner was anxious to have something done, if not to cure, at least to prevent the enlargement of the rupture; my opinion of the case was to operate immediately, as from the age and constitution of the filly the danger was

not great, and the chances were the operation would prove successful.

On Friday, the 1st of August, the filly was brought to my infirmary, and having lessened the contents of the bowels by giving laxative medicine and clysters, on the first Tuesday following her admission, I operated in the following manner:

Had the animal cast and turned upon her back and secured in the same manner as for castration. I proceeded to return the protruding portion of gut, which was easily done when in that position. The reduction effected, I pinched up the skin and passed an iron skewer about four inches in length through the skin and abdominal muscles, bringing the ruptured edges of the muscles together; taking care not to injure the intestine by guiding the point of the skewer with the fore-finger of my left hand. I secured the skewer in its place with a piece of twine, in the same manner as the pin is fastened in a horse's neck after the operation of blood letting. I then passed a second and third skewer through the skin only, anterior and posterior to the first, secured in the same manner, and the operation was concluded.

Next day the filly was a little feverish, and a slight swelling appearing in front of the rupture which continued to increase until Saturday, the 8th, when one of the skewers sloughed out, and on the day following the other did likewise; the ligatures and skewers having done their duty. During the time the swelling existed the abdomen was fermented with hot water several times a day, and a few doses of febrifuge medicine was administered, also clysters, and the animal kept continually in a standing posture. The symptoms now continued favorable, the swelling gradually decreasing, and on the 18th my patient was dismissed convalescent. A.S.

#### Rabies in a Horse.

*Communicated to the "Veterinarian" by R. H. Dyer, Veterinary Surgeon, Waterford.*

A few weeks since, I promised to send you an account of a case of rabies in a horse, but circumstances over which I have had no control have prevented my doing so till now. In the meantime, I have been endeavouring to ascertain with certainty when the animal was bitten.

No person can or will say, however, whether he was bitten or not, and the only evidence to be procured, is, that several mad dogs have been in the neighbourhood, and that many animals have been bitten, and further, that in every case the animals so bitten were at once destroyed.

According to the evidence it appears that, the horse in question was taken ill on Saturday, February 22nd, on which day the owner applied to me for a colic draught, such as was sent to a neighbour of his a short time before.

I made some enquiries as to the symptoms present, when he replied that the animal was in pain and had no evacuation either from the bladder or bowels. He took with him an ordinary colic draught, which, however, did not afford any relief, for, on the following morning, Sunday, I was requested to see the horse; he being sent to my place of business. When my attention was first directed to him he was standing side by side with a mare, and I enquired how long he had been blind. The owner answered he did not know he was blind, but that he had noticed something "odd about him" for he blundered about, and did not seem to know what he was doing. On approaching him he snapped at me, which led me to inquire if he was in the habit of biting. The man answered in the negative. I said, "He has an appearance akin to that of a mad dog. The saliva was flowing from his mouth at this time. The moment I made use of the term mad dog neither the owner nor his servant would approach the animal. I suspected the horse had been bitten, but I could not elicit from them any information to lead me to a correct decision. They merely said that a mad dog had passed through their premises about three weeks before, and it was known he had bitten several animals in his progress.

The symptoms present were as follows. The horse was very restless and snapping at everything within his reach, excepting the mare which was with him. He never attempted that I am aware of to injure her. On feeling his pulse I did not detect any marked peculiarity in it, excepting a prolongation occasionally of its beat. The respiration, however, was very much accelerated, which seemed somewhat strange, considering that the pulse remained unaltered. I made a special remark about this at the time, I examined every part of the animal, but did not detect any evidence of a bite. The prominent symptoms were total blindness, anastation of the urinary secretion, discharge of large quantities of saliva, increasing restlessness, and occasional attempts to bite those near him. He also had a most ferocious look.

I administered a sedative draught with great difficulty. The act of giving the medicine brought on a severe paroxysm. He became almost frantic. Being much worse in a couple of hours I attempted to administer another drench, but found it to be impracticable. Every at-



tempt at introducing the horn into his mouth made him furious. He would throw himself upon the ground—not fall down,—as if determined to break his neck—he would rise again, and stagger about the yard, all the time snapping at the rope by which he was held. At length finding that he was becoming dangerous, I secured his legs when down, and kept him in that position, which made him if possible more frantic. At this time the owner, seeing the horse secured, felt more at ease, and approached within a couple of yards of him. He soon consented to my destroying him, which I did by opening the right jugular vein and blowing into it. This took place about three p. m., and five hours after I first saw him. For the last three hours, in particular, the animal had been most dangerous to approach or to handle.

The next morning I examined the interior of the body. Nothing seemed amiss except the heart, which was greatly dilated, pale, and soft in texture. The brain was afterwards examined in the presence of a medical friend. We found the membranes very much inflamed, especially at the base of the brain. Although it was evident that the base of the organ had suffered most, we were of opinion that the substance of the brain in general gave indications of disease. I have since been told that many other animals have been bitten by dogs supposed to be mad. From what I can learn, it seems that about three weeks elapse before the bitten animals are seen to suffer. The black mare, whose companion the horse was, has been attacked since, and, I believe, was destroyed. It is almost impossible here to trace things to their source, for the country people will afford no assistance. The desire to stifle all information abounds with them. I have not added much to that which is already known of this disease, but such as that case is, it is at your service.

## Miscellaneous.

### Scottish Anecdotes.

#### *Editors of the Canadian Agriculturist,—*

In your May number, dated 16th, there is an original anecdote of Burns, the first time I ever saw it imputed to Burns. It is said there are always two ways of telling a story. I recollect some forty years ago or more, my mother telling me the story, but she imputed it to Ayrshire Will, a crazy sort of an individual who had a great propensity for rhyming after anything that you would say to him. Lord Kilmarnock and Mr. Boyd (not lord Boyd) were out taking a walk, when they saw Will coming to meet them. It was arranged to say something to Will that he could not rhyme, so both

said "Boo," to him, when he addressed them thus :—

Ther's Lord Kilmarnock and Mr. Boyd,  
O' sense and manners they are void,  
They'r like the Bill among the Kye  
Plays "Boo ! to iolk as they gang by."

My mother was an Ayrshire lass, and she had many of these stories to tell me. I recollect another of the same individual, and if you can devote a little more room in your valuable paper, it may please some of your readers. For myself I take pleasure in such. The Earl of Eglington, coming upon Will resting on the road side, as if asleep; the Earl awoke him and asked him what he was doing there, "I just sat down to rest, and fell asleep, and I was dreaming the Earl asked me what I was dreaming about. I dreamed that your lady gave me half-a-pound of tea, and your honour gave me two pounds of sugar." "Aye, but," says the Earl, "Will, you know dreams are contrary," meaning that he was not to get anything. "Well, if they are," says Will, "you can give me the tea," and let her ladyship give me the sugar." Another of the same "Daft Will Spier," who was a privileged hunter of Eglington Castle and grounds. He was discovered one day taking a near land cut, and crossing a fence in the demesne. The Earl called out, "Come back, sir, that's not the road." "Do ye ken," said Will "whaur I'm gain?" "No," replied his lordship, "Weel hoo the deil do ye ken whether this be the road or no?"

READER.

North Leeds, 1862.

THE AGE OF OUR EARTH.—Among the astounding discoveries of modern science is that of the immense periods which have passed in the gradual formation of the earth. So vast were the cycles of the time preceding even the appearance of man on the surface of our globe, that our own period seems as yesterday when compared with the epochs that have gone before it. Had we only the evidence of the deposits of rocks heaped above each other in regular strata by the slow accumulation of materials, they alone would convince us of the long and slow maturing of God's work on earth: but when we add to these the successive populations of whose life this world has been the theater, and whose remains are hidden in the rocks into which the mud or sand or soil of whatever kind on which they lived has hardened in the course of time—or the enormous chains of mountains whose upheaval divided these periods of quiet accumulation by great convulsions—or the changes of a different nature in the configuration of our globe, as the sinking of lands beneath the ocean, or the gradual rising of continents and islands above;—or the wearing of great river beds, or the filling of extensive water basins, till marshes first and then dry land succeeded to inland seas

—or the slow growth of coral reefs, those wonderful sea-walks, raised by the little ocean-architects whose own bodies furnish both the building stones and the cement that binds them together, and who have worked so busily during the long centuries, that there are extensive countries, mountain chains, islands, and long lines of coast consisting solely of their remains—or the countless forests that have grown up, flourished, died and decayed to fill the store-houses of coal that feed the fires of the human race to-day,—if we consider all these records of the past, the intellect fails to grasp a chronology for which our experience furnishes no data, and time that lies behind us seems as much an eternity to our conception as the future that stretches indefinitely before us.—*Agassiz.*

**LEeks, GARLICK, AND ONIONS**—Shakespeare, as we all remember, in his play of Henry V., refers to the leek; and Gower asks Fluellen: "But why wear you leek to-day, St. Davy's day is past?" Fluellen desires Pistol to eat it, although he complains and says: "I am qualmish at the smell of leek." The Emperor Nero, we can assure Signor Mario, ate them in large quantities to improve his voice. The Egyptians use them as a sauce with roast meat, or for breakfast with bread. We read in the book of Numbers of the Israelites murmuring for the onions, leeks, and garlic of the Egyptians during their sojourn in the desert. Garlic was most esteemed by the ancients. The Romans and Greeks gave it to their soldiers to excite their courage, and to their labourers to strengthen them under their toil. Though they are so sharp, and "move tears" by their smell, the onion tribe has never been beneath the notice of the truly great. Napoleon Bonaparte devoured them greedily. One of the most favorite dishes was a leg of mutton, stuffed with sage and onions—On one occasion he ate so voraciously of it, that he was seized with a violent fit of indigestion, and unable to attend to his military duties. The conqueror of Marengo stayed by sage and onions! Here's food for moral zing.

**OBSTINACY OF THE SEA HORSE**—The walrus is an obstinate animal, and does not fly on the approach of man; on the contrary, forming themselves into a body, they go and meet him, and resist any attempt on his part to proceed. When a company of travellers meet these animals on the shore, they are forced to fight their way through them: and if the walruses are pelted with stones, they gnaw them with their teeth, but afterwards attack the men with redoubled fury, rending the air with the most tremendous growling. These animals seem to be fully aware of the effect of united resistance and attack, and also of the utility of keeping in masses and ranks; for, should any one of them attempt to retreat, those in his rear fall upon,

and compel him to keep in the ranks, or kill him. Sometimes it happens that, when one walrus attempts to stop another, who is retreating, they all begin to suspect each other of being inclined to fly, and, in that case, the contest often becomes universal. When two are fighting with one, the others come to the aid of the weaker side. While they are thus fighting on the land, others that are in the water raise their heads, and look on for a time, till they also become enraged, swim to shore, and join in the combat.—*Cassell's Illustrated Natural History.*

## GRASS

BY DR. JOSEPH REYNOLDS.

It groweth everywhere. Its tender blade  
Shooteth in the sunshine and in the shade.  
It groweth on the hill-side, and the plain,  
By the sheltering hedge, in the shady lane.  
It springs by the roadside, under our feet,  
In the garden—where beds and borders meet;  
Under the shrubs, where blooms the scented rose,  
And the wild jasmine or sweet almond grows.  
It creeps up the bank, it runs down the slope,  
It springs with the crocus under the cope  
In the early spring, and stays in the fall  
With the pansy that peeps under the wall;  
In the fresh meadow, where the waters gleam,  
In the clear sunlight, and the sparkling stream  
Winds its course—now hidden, and now seen—  
It spreads its modest, cheerful coat of green.  
It groweth everywhere: on the mountain,  
In the valley, by the springing fountain;  
In the forest, in the field, on the beach,  
Just where the daily flowing tide doth reach.  
It creepeth close by the shore of the lake,  
Where its soft rootlets seek their thirst to slake;  
The waves that ceaseless lap its foam-crowned tip  
Kiss the green leaflets that stoop down to sip.  
The wild deer from the wood crops the smooth turf  
As early he comes to sport in the surf.  
The herds of the prairies, with the wild ass,  
All find their homes in wide oceans of grass;  
The droves of mustangs on the Mexican plains,  
The Tartar's wild horse in the Afghan domains,  
The goats of the Alps, that climb on the rocks,  
The horned zebu, and the fleet springboks,  
All ranging free as the birds in the skies,  
Crop the sweet herbage that nature supplies.  
The soft, modest grass is everywhere seen,  
Spreading its carpet of beautiful green,  
To cover the scars man makes in the earth,  
And smooth o'er the soul that giveth it birth.  
When hoofs of war-horses trample the soil,  
In the rage and strife of battle's turmoil,  
When war's iron storm tears up the fair plain,  
And ridgeth it o'er with graves of the slain,  
The soft grass, in pity, spreads o'er the scene,  
Covering it up with its mantle of green.

—*New England Farmer.*



**MATERNAL HABITS OF THE KANGAROO**—As most of my readers are aware, the kangaroo like nearly every other animal indigenous to Australia, is "marsupial" i. e., the female is provided with a pouch outside the bottom of the stomach, in which are the teats, to one of which the young foetus is attached during the period of gestation, I believe about sixty days; and when fully formed—soon, in fact, as the young one begins to live—it becomes detached from the teat, which now supplies it with milk. When the young one leaves the teat, it is in an equal state of development to the new born offspring of any other animal; in fact, this pouch appears to be the womb of all these marsupial animals, and not, as many suppose, merely a place of refuge in which the old mother carries her young. Here the young one at first principally lives, till able to run at the foot of the mother; but, even then, when danger is near, it tumbles head over heels into the pouch for protection; and it is wonderful how quickly the old doe can pick up the joey when running at full speed, and shove it into the pouch, its pretty little face always outside. There she carries it till hard pressed, when the love of life overcomes the love of the mother, and she then casts it away to save herself. This, in bush phraseology, is termed "dinging the joey." I once saw an eagle-hawk chasing a doe kangaroo with a heavy joey in the pouch through the forest. The cunning bird kept stroke for stroke with the kangaroo, which it hardly dare attack; but it well knew as soon as the old mother became exhausted, she would cast away the young one. Two ounces of kangaroo-shot from my gun, however, stopped the eagle's gallop. I might have killed the old kangaroo as well, but had not the heart, after seeing the struggle she was making to save the life of her offspring.—*Bush Wanderings of a Naturalist; by an old Bushman.*

**THE NEWSPAPER**—What charm then—what weird power lies in these straight lines of letters, that they should find the way to every house, and stir up a peculiar interest in every heart? They simply record the life and doings of our race. They give rude etchings and photographs of man in all the varying phases of his character—character developed in every possible condition—under every conceivable form of trial; and thus they appeal to our sympathies and desires in every way. The struggles and aims, the fears, ambitions, hopes, cares, passion, crimes and virtues of man are here set down faithfully in shorthand. The newspaper makes Shakespeares of us all. It furnishes us with an outline—it may be some fireside tragedy—we can at will fill up the sketch with details of the most romantic interest; the materials are given, we can weave them into a web hued and patterned as gorgeously as we please. It supplies us with a few bald facts relative to some mysterious occurrence; straightway we are absorbed in the exci-

ting process of completing the imperfect story, our minds pursuing a thousand probabilities, yet still left unfettered in a boundless universe of conjecture. The details of some strange scheme or deed are laid before us—at once all the faculties of the mind are engaged in the work of tracking out the hidden motives; unravelling the complications; developing the secret source or agency; in short, solving the mystery in what ever form it may present itself. Most people laugh at the countryman who wished a newspaper "wi' plenty o' guid murders in't." But the "guid murders" doubtless meant those which the utmost ingenuity of concealment had shrouded in thorough mystery; and the desire probably indicated—not a weakness—not an unnatural gloating over the most brutal form of guilt, but the strong, though morbid working of a high quality of mind.

The feeling of power evoked by the newspaper is another element of attraction in it; it sets before us all the kingdoms of the world, and all the glory of them; by it we sit in the councils of kings, and take part in those deliberations by which the destinies of the world are controlled; by it we stand in the assemblies of the wise, while genius displays all her dazzling treasures; and by it we can, with the disciples of science, explore, investigate, and acquire new riches of knowledge in every direction where the Creator's own hand has written the inexhaustless wonders of his wisdom.—*Good Words.*

**CONCRETE HOUSES.**—In reply to an inquirer I copy from the *Civil Engineer and Architect's Journal* for 1852, the following brief description of the erection of two houses in concrete:—"On the estate of East Cowes Park, Isle of Wight, adjoining Osborne, her Majesty's marine residence, two villas have been recently erected, under the direction of Mr. Langley, constructed entirely of concrete, composed of one part of Francis's Medina Cement, with seven of coarse gravel and grit, the gravel having been first carefully sifted clean and rendered perfectly free from sand. The gravel was dug on the estate, and the walls carried up, as well as the chimneys, by fixing two or three boards vertically, and filling in the concrete between about 12 to 14 inches thick, by which method, in consequence of the quick setting of the cement, boards were shifted every three or four hours as the work progressed. Even the arches were all turned in it, no bricks whatever being used. The method is not only extremely economical, but has the great desideratum of being perfectly free from damp, although the walls are not so thick as in the ordinary method of building by brick or stone. The absence of sand in the mixture is absolutely necessary, as every particle of sand engages a proportion of cement, or, in other words, deprives the gravel of so much strength, and materially deteriorates the work. We believe that a building-

society is about to be formed for the purpose of erecting many houses on the estate, with similar materials."—*London Field*

**MIGRATION OF EELS.**—A close observer assures us that the following interesting evolutions occur when eels come in from the sea: The aggregate shoal, about to ascend the inland streams, move up the shore of the river in the form of a long, dark, rope like body, in shape not unlike an enormous specimen of the animals which compose it. On reaching the first tributary, a portion, consisting of the number of eels adequate for peopling this stream, detaches itself from the main body and passes up; and, in the subsequent onward passage of the shoal, this marvelous system of detaching, on reaching the mouths of brooks, a proportionate quantity of the great advancing swarm, is repeated, until the entire number has been suitably provided with rivulets to revel in. Such being the wonderful instinct by which nature ordains that each stream be provided with a competent number of this migratory creature.—"*A Slice of Salmon*;" in *Macmillan's Magazine*.

**AN EAGLE'S STRATAGEM.**—As the mountains around the Königs Sea abound in chamois, the eagle very naturally resorts there; and opportunity is frequently afforded of witnessing his tactics, modified by circumstances. The following account gives an instance of most cunning stratagem; but it also shows how impotent for attack the eagle is when his victim is not entirely exposed. A good-sized chamois buck had got upon a ledge of rock, and was gazing downward and about him as these animals like to do. An eagle perceived him; but as the bird could not approach close to the rock on account of his breadth of wing, he resolved to obtain the prize he had marked as his own in another manner. So he sailed by the chamois on his narrow path as near as he dared come; then again and again; and as the animal retreated in order to quit his perilous position, the eagle, wheeling round in a smaller circle, met him instantly, to hem in and cut off his retreat. By thus rushing past within a few feet of him, and filling him with terror, he hoped to bewilder the chamois, and cause him to fall over the precipice, in which case he would have but to descend, and carry off his booty. And, in fact, the chamois, from trepidation probably, in turning a corner, slipped with one hind foot over the ledge. He lost his balance, and fell headlong over the rocks, as the eagle intended that he should. But after lodging for a short time on an intervening slope the carcass rolled off, and came toppling down into the lake. The whole proceedings had been watched by two persons in a boat. They now crossed to get the chamois; while the eagle, disappointed of his victim, wheeled above them, watching all they did.—*Forest Creatures*; by Charles Boner.]

**DANGEROUS COSMETICS.**—At a recent sitting of the French Academy of Medicine, Dr. Reveil read a paper on the necessity of preventing perfumers from selling poisonous or dangerous articles, which should be exclusively left to the responsibility of regular chemists, and not sold without a physician's prescription. "To show the danger there is in allowing the unchecked sale of certain compounds," he said "I need but state that arsenic, the acid nitrate of mercury, tartar emetic, cantharides, colchicum, and potassa caustica form part of their ingredients. The kind of soap called lettuce soap, which is sold with the announcement that it has been acknowledged by the Academy does not contain the slightest trace of lettuce. This and other soaps are all coloured green by the sesqui-oxide of chromium, or of a rose colour by the bi-sulphuret of mercury known as vermillion. Some that are cheaper contain 30 per cent, of insoluble matter, such as lime or plaster, while others contain animal nitrogenous matter which, having escaped the process of saponification, emits a bad smell when its solution is left exposed to the air. The various toilet vinegars are so far noxious that, being applied to the skin still impregnated with soap and water, they give rise to a decomposition, in consequence of which the fatty acids of soaps being insoluble in water, are not removed by washing, become rancid, and cause a chronic inflammation of the skin. The preparations employed for hair-dye under the pompous names of 'African Water,' 'Florida Water,' &c., all contain nitrate of silver, sulphur, oxide, and ete-tate of lead, sulphate of copper, and other noxious substances. All cosmetics for removing hairs or freckles are dangerous; the *lait antephe lique*, for instance, contains corrosive sublimate, and oxide of lead. Were a chemist to deliver such a remedy to a customer without a regular prescription, he would be liable to a fine of 6000f." Dr. Reveil concluded by expressing his regret that certain physicians should so far forget their own dignity as to lend the support of their names to such noxious inventions.—*Galigan's Messenger*.

**SINGULAR DOMICILES.**—Like other familiar birds, the sparrow sometimes builds its nest in very unsuspected localities, and there are several examples of their nests being placed in different parts of a ship's rigging. For example, while the Great Britain was lying in the Sandown graving dock, some sparrows built two nests in the "bunts" of the main and mizen topsails, i. e., the place where the sail is gathered up into a bundle near the mast. As the sail could not be set without disturbing the birds, the sailors augured a speedy and pleasant voyage. Mr. Thompson gives an instance of the sparrow building upon the furled sail of the *Aurora*, of Belfast; but as the sail was loosened during the second voyage to Glasgow, the nest was destroy-



ed and the eggs broken. Again, a pair of sparrows built their nests under the slings of the foreyard of the ship *Ann*, of Shields, just before leaving port, and, when the vessel creaked the Tyne, the birds went ashore and brought back materials wherewith to complete their home.—*Routledge's Natural History*.

**DOMESTIC SERVICE.**—We are reminded here of a good-hearted housemaid in a clergyman's family, whose eyesight was in danger before she let anybody know her troubles. She valued her "religious privileges," and bore with much for their sake; and as often as she believed she had made up her mind to leave her place, her master's discourse to her on the trials of life, and descriptions of the beauty of patience upset her resolution, and induced her to try again. She was expected to call the pupils (it was a school), at six, summer and winter, and to serve the warm water, light the fires, and serve the breakfast, have the school-room swept and in order, besides washing and dressing the little children, —her mistress thinking it quite hard work enough to be ready when the bell rang for prayers. All day the young woman was at work, full drive, as she and the cook must have been in a household of that size and construction. When the last of the family went to bed at eleven o'clock, she was set down to make her master's fine shirts, by a single candle in the kitchen, and she rarely went to bed before one or two, except on Sunday nights. When invited out to tea at holiday times, she was told that if she was not home before nine she would be locked out; and it was no empty threat. The only way to procure her a sociable evening was by offering her a bed. Moreover she was not allowed to go out without her workbag, in which was a pair of wristbands, or a shirt front, which she was to bring home finished. When asked why she put up with such treatment she alleged her unwillingness to give up her "religious privileges," and to inconvenience an inexperienced mistress. The state of her eyes settled the matter at last, and her sight was barely saved by a costly abstinence from work and wages. The mistress has probably learned from experience something of what it was she required. The family emigrated to a place where, if servants were to be had at all, they would certainly refuse to work both night and day, or at all more than suited their convenience.—*Edinburg Review*.

**MIGRATORY INSTINCT.**—The Tower of Babel heard the already recognized law of migration authoritatively promulgated, beheld it branded into the living tablets of human nature. And that law has never yet become effete: no portion of it has been annulled. Its operation—certainly never for long even suspended—has never ceased to afford evident tokens of its continuance. Look at the "Great Migration," as

it is called, which Europe saw before the Medæval times, and the colonizations of still much earlier periods, the irruptions of huge hordes of fierce herdsmen-warriors in many an age and many a country, in both Africa and Asia, upon lands and labours they knew not of, except as it were by a dim, dreamy-hearsay, myth-like both in its vague dimness and its fundamental element and substratum of truth. These illustrations of the instinct which impels the human species to migrate from scenes of failing capabilities and resources to newer ones of abundant supplies and exceeding susceptibility of development, are as numerous as the ages which have looked on man's existence, as striking as the succession of scenes that have ever newly presented to his wondering gaze, as he has been again, and yet again driven to seek some newer and fitter abiding place.—*Atkinson's Sketches in Natural History*.

**ANIMALS BECOMING PARENTS TOO EARLY.**—Victor Gilbert never allowed ewes to have lambs until they passed their third year; and the bucks were not used until they had arrived at full maturity. He, as well as many other sagacious stock-raisers that we might name, are probably conversant with the fact that during the period of growth and development up to maturity, the reproductive organs are dormant, while at the same time the nutritive function is wholly engaged in elaborating chyle and blood for the development of bone, muscle, and nerve, and that calling into requisition the reproductive or generative organs, before the animal has attained full growth must necessarily divert the elements of matter intended for nutrition from their legitimate channel, and direct them to the reproductive organs. A too early use of the purely animal function induces weakness and stunted growth.—*American Veterinary Surgeon*.

**FREAK OF AN AGRICULTURAL LOCOMOTIVE.**—On Wednesday evening last the inhabitants of the Bull Ring, Birmingham, were much alarmed by a loud crash at the premises of Mr. John Gregory, boot manufacturer, a few doors from Moor-street. On going into the street to ascertain the cause, it was found that a large agricultural locomotive, moved by steam power, had dashed into the door-way of Mr. Gregory, smashing it to pieces, as well as several shutters. It appears that the steam plough, with some half dozen waggons containing implements, left Mr. Smith's premises at Coven near Wolverhampton, Stratford-on-Avon, and was driven by steam power along the highway and through the principal streets of the borough. To avoid the hill of the Bull-Ring, the train (or such it was took the way of Carr's Lane, and Moor-street) On turning into the Bull Ring, from some misunderstanding as to the best direction to take so as to avoid accident, a sudden turn was given to the guiding wheel, and the ponderous mach-

ine, weighing 15 tons, and capable of drawing 50, jumped upon the pavement, and ran with great force against Mr. Gregory's shop. There were two men in charge of the agricultural train at the time, and both were at their post on the engine, and when it ran into the shop they had barely time to save themselves from being crushed to death by jumping off the machine. Fortunately the water in the boiler was rather low, and the steam not powerful at the time or the immense mass would either have fallen through the thin boarding of the shop flooring into the cellar, or, by going three or four inches farther, knocked down an iron pillar which supported the front of the house. The occurrence attracted an immense crowd of persons, doubtless increased by the novelty of its character. The ponderous machine once fixed in the doorway of the shop, the difficulty was to get it back again into the street, and nearly three hours elapsed before this was accomplished. It was found necessary to obtain the assistance of six of the corporation horses to effect its removal, and at eleven o'clock the train was again on its way to Stratford.

**THE CRAB THAT FEEDS ON COCONUTS.**—What a wonderful world it is in which you live, and how very numerous are the proofs of the wisdom and goodness of God in taking care of all his creatures! You may be quite sure that he will take care of you, seeing that there are none so mean and so little but what he makes provision for their wants. There is a curious example of the instinct which the Almighty gives to some of the creatures he has formed that I have a mind to relate. You have all seen crabs; but there is an odd kind of crab that you have not seen, which lives in the East Indies, and instead of finding its food in the sea some say that it climbs up, like a monkey, into a cocoa-tree, that it may dine and sup; at any rate it feeds on the fruit which falls from the branches. But how does it get at the kernel? for your own little teeth tell you that the shell of the coconut is anything but soft. The Creator has given its forelegs a pair of strong pinchers; with these it tears away the husk, piece by piece, from that end where the eyeholes are situated. It then hammers away till it has broken the shell open; then it turns it round, and by working into it by its hind claws, which are as hind legs, it gets out the sweet and juicy inside of the coconut. It goes every night to the sea to refresh itself, as one drinks a glass of water at supper time, before going to bed. This is a very strange example of what we call instinct, which means something in beasts, and birds, and fishes, and reptiles which is to them instead of the reason and conscience which God has given you. What an interesting illustration this little fact is of what the Bible says: "The eyes of all wait upon thee, and thou givest them their meat in due season. Thou openest thine hand, and satisfiest the desire of every living thing."

## THE INDEPENDENT FARMER.

Let sailors sing of the windy deep,  
Let soldiers praise their armour,  
But in my heart this toast I'll keep,  
The Independent Farmer.  
When first the rose in robe of green  
Unfolds its crimson lining,  
And 'round his cottage porch is seen  
The honeysuckle twining;  
When banks of bloom their sweetness yield,  
To bees that gather honey,  
He drives his team across the field,  
Where skies are soft and balmy.

The blackbird clucks behind the plough,  
The quail pipes loud and clearly,  
Yon orchard hides behind its bough  
The home he loves so dearly;  
The grey old barn, whose doors unfold  
His ample store in measure,  
More rich than heaps of hoarded gold,  
A precious, blessed treasure;  
But yonder in the porch there stands  
His wife, the lovely charmer,  
The sweetest rose on all his lands—  
The Independent Farmer.

To him the Spring comes dancingly,  
To him the Summer blushes,  
The Autumn smiles with mellow ray;  
He sleeps, old Winter hushes.  
He cares not how the world may move,  
No doubts nor fears confound him;  
His little flocks are linked in love,  
And household angels round him;  
He trusts in God and loves his wife,  
Nor griefs nor ills may harm her;  
He's nature's nobleman in life—  
The Independent Farmer.

**ABSORPTIVE POWER OF THE SOIL.**—No contrivance of science to the practice of agriculture is more calculated to arrest the attention of the farmer than the various observations which have been made within the last few years regarding the remarkable power the soil possesses of absorbing and retaining some of the indispensable elements of the plant. They are the more worthy of attention, inasmuch as the facts which have been determined are to a certain extent, opposed to some of the more commonly prevalent opinions. They lend but little countenance to the idea that the manure, when committed to the soil, lies there in a precarious condition, liable at any moment to be deprived of its soluble constituents by the rain, and of its volatile matters by the heat of the sun's rays; but, on the contrary, they tend to show that there is a conservative influence at work in the soil which imprisons these substances within it, and stores and preserves them for the future uses of the plant; and, what is more, it exercises this influence more powerfully on these substances which are most sparingly distributed throughout the soil, holding with the firm grasp of a miser



the potash and ammonia, but leaving the soda and lime, which are less important to the plant, at the mercy of the rain. The discovery of these facts has thrown an entire new light on the chemistry of the soil, for they have shown that it must be studied not merely by itself, but in relation to the various substances with which it comes in contact in the course of cultivation so as to trace the influences which they mutually exert, and thus a subject already sufficiently complex has become more difficult and laborious than it was before.—*Scottish Farmer*.

**"THE SPIRIT" IN GINGER BEER.**—As many temperance men are in the habit of drinking ginger beer under the impression that they are still "keeping the pledge," by abstaining from alcoholic liquor mixtures, it may perhaps be as well to tell them the real truth, that all good ginger beer contains a notable portion of spirit. The more the beer is "up," the more certain is it that alcohol is present. It is well known that ginger beer is made with sugar, ginger, &c.; and that it is "set" to ferment before it is bottled; now, it is during the fermentation of the sugar that spirit is produced, and, to show its presence, it can be easily separated by distillation. In making this statement we do not wish to bias the opinion of any man, but merely to correct a popular error—the belief that ginger beer is free from spirit!—*Septimus Piesse*.

**WHITEWASHING SHINGLES.**—Fresh or caustic lime, applied during the heat of summer, and after the wood has become thoroughly dried, enters the pores, and tends strongly to prevent decay. We have recently examined a board fence, which had been whitewashed in successive coats about 18 years ago. The boards were hard and sound, and had not become covered with moss, as was the case with another fence near, built at the same time. There is no doubt that a great advantage would result from whitewashing shingles before laying them. We have on a former occasion, given some instances of the durability thus imparted to them. A late number of the Boston Cultivator gives some additional examples. J. Mears of South Abington, performed the experiment in substance as follows:—He procured a vat (a lime vat at a tannery does well,) and applied salt with a small portion of potash to the lime, and immersed the shingles for four hours. The wash was afterwards brushed over the shingles when laid. This made a fire-proof roof on a blacksmith shop, now eleven years. Silas Brown, another correspondent says 25 years ago, he dipped shingles into a large kettle of lime wash to which salt had been added, and the whole kept boiling. A few shingles were dipped in all over at a time, long enough to soak them well, and then thrown aside to dry. In a short time all the shingles were thus prepared. Although what are termed "sap shingles," they have now lasted 25 years,

"and may do so for years to come." Several experiments of a similar character have been made since, with very successful results. *Cultivator*.

**WHY YOU CURSE THE SEED STORES.**—Do you want to know why? "Certainly?" Well then, let me tell you what has been often told you before:—*You plant too deep!* You don't believe it? I do, and I know it. There are hundreds of western farmers who as conscientiously believe that they must plant their corn from *four to six*, and in some instances, *eight inches* below the surface, as they believe there is a God in Israel, or a McCLELLAN to swear by. And you can't make them believe differently. They know; they've tried it; and their experience proves them and their practice right, all "book-learned" farmers to the contrary notwithstanding. And they despise "book-farmers" as bad as they hate gophers; and they kill all the gophers they can find.

Why do they plant so deep? Because they think the soil is peculiar. And in that they are right; it *is* peculiar. But *they* have made it so by their manipulations. They plow it when it is wet, harrow it when it is dry, and it is cloddy and lumpy, and rough as a Down-East field of stone. Then when planting comes they must get down to moist earth, or it will not germinate. They have to get down deep to do it. The roller is not known to the majority of farmers in corn culture. It ought to be. On such land as I have described, it ought to be used *before* the corn is planted, and again afterward. But I speak of the practice in corn planting show to the more clearly where the fault is in the case of smaller seeds, such as are purchased at the seed stores, planted in the gardens, and never grow at all! Why, only yesterday, I heard a lady say that she put her lettuce seed in *three inches deep*—down where the ground was moist—and it had not come up yet; and she was indignant! The seed stores were the matter, of course. "You know they *do* cheat so in seeds," said she to her companion. How sweet, and innocent, and indignant, and disappointed she looked, poor woman! For she was really a splendid woman; but she had not learned to garden. And she confessed that she planted her peas nearer a foot than six inches deep; and her flower seeds which she had got all the way from the Hub of Creation, were equally well planted—and O, the seeds men!

It should be remembered that the season is backward, the ground wet and cold in most localities; and then the fate of the good woman's seeds will be apparent. So of other sensible people who undertake farming and gardening. They know little of the laws of production, and less of the mode of manipulating soil. The more completely pulverized the soil the deeper they plant. It would seem hardly necessary to say

that in a fine, well pulverized soil, compact and clean, seed should *never* be planted deeper than three times its diameter; yet it is necessary to say so, and keep saying so, as long as children continue to be born, and seed is purchased and planted.—*Rural New Yorker*.

**THE SICK IN BED**—With a proper supply of windows, and a proper supply of fuel in open fireplaces, fresh air is comparatively easy to secure when your patient or patients are in bed. Never be afraid of open windows, then. People don't catch cold in bed. With proper bed-clothes, and hot bottles, if necessary, you can always keep a patient warm in bed. Never to allow a patient to be waked intentionally or accidentally, is a *sine qua non* of all good nursing. If he is roused out of his first sleep, he is almost certain to have no more sleep. It is a curious but quite intelligible fact, that if a patient is waked after a few hours' instead of a few minutes' sleep, he is much more likely to sleep again; because pain, like irritability of brain, perpetuates and intensifies itself. If you have gained more than the mere respite. Both the probability of recurrence and of the same intensity will be diminished, whereas both will be terribly increased by want of sleep. This is the reason why a patient waked in the early part of his sleep, loses not only his sleep, but his power to sleep. The more the sick sleep the better will they be able to sleep. A good nurse will always make sure that no door or windows in her patient's room shall rattle or creak; that no blind or curtain shall, by any change of wind through the open window, made to flap; especially will she be careful of this before she leaves her patient for the night. If you wait till your patient tells you or reminds you of these things, where is the use of us having a nurse?—*Florence Nightingale*.

**ANTIQUITY OF THE PIG**—The pig is the existing representative of a very ancient race of animals which lived and died upon this earth long before there were was Christians to devour, or Jews to abhor their flesh. The same species of wild boar that was hunted by our forefathers was contemporary with the mammoth, cave-bear, and the long haired rhinoceros. Some persons imagine that geology deals only with fossil shells or fishes; but there is a vast deal of interest attached to the geological history of the predecessors and representatives of our domestic animals. We know that the wild ancestor of our domestic pig was in existence before the separation of England from the Continent of Europe; and that the hunter, had hunters then lived, might have chased the boar through forests the sight of which is now occupied by the waves of the English Channel. Mammoth tigers, and rhinoceroses perished but the wild boar lived, and lives still on the Continent of Europe, though extinct here.—*Old Bones; of the Rev. W. S. Simonds*.

**COLLODION FOR GRAFTING**.—They are practicing a process in France, by which trees can be grafted at any season of the year, when mature buds can be obtained, whether the sap is in a flowing state or not. They remove a small piece of bark and wood, leaving a perfectly smooth surface, to which a similar piece, containing the bud intended to form the future tree is fitted. This is immediately sealed over with collodion, which forms a strong, impervious cuticle, insuring a perfect union of parts and a free circulation of sap, on approach of warm weather.—*Working Farmer*.

### Editorial Notices, &c.

THE WESTMINSTER REVIEW—July: New York; Leonard Scott & Co., 79 Fulton Street.

We have received from the Publishers, through Mr. Rowsell, of this city, the current number of the *Westminster*, the contents of which evince, as usual, great ability and ripe scholarship. The articles on the Life and Policy of Pitt; Election Expenses; English Rule in India; will be perused with interest by politicians of all shades of opinion; while those on the Philosophy of Sir William Hamilton; Celebrated Literary Friendships; and the Dawn of Animal Life, will be read with equal pleasure and improvement by all classes of people that possess the smallest share of literary and scientific taste. The department of this Review consisting of a running comment on the more salient points of the chief publications of the quarter on the most important branches of human knowledge, including politics and polemical theology, is of the greatest service to all such,—the number of whom is daily increasing in all the walks of life,—who desire to keep pace with the literary and scientific progress of the age. Although the theological bias of the *Westminster* is very far from being in accordance with the general belief of the age, an enquiring mind can scarcely afford to do without it, as its habit is to treat speculative subjects in a calm, free and liberal spirit. The article on Dr. Davidson's introduction to the Old Testament is a case in point. Such articles of the *Westminster* require to be read with one's eyes fully open, and to accept their conclusions only after the most thorough and careful examination.

BLACKWOOD'S MAGAZINE, for July, from the same publishers, is also to hand, and as usual contains articles of general interest and sterling worth.



The same publishers have issued an American edition of the *Farmers' Guide* to scientific and practical agriculture, by Henry Stephens, F. R. S., of Edinburgh, with notes and appendices by the late lamented Professor Norton, of Yale College: 2 vols. Royal octavo, 1600 pages, and numerous steel plates and engravings. This is allowed by the highest authorities both in Europe and America, to be the most complete work on Agriculture, both in theory and practice, ever published, and the American edition is printed from the stereotype plates of the Edinburgh edition, and may be procured in this country for about one-third of the price. *Five dollars only* for these two large beautifully got up volumes! We should like to see this inestimable work on the book-shelf of every farmer in Canada.

#### Horse Infirmary and Veterinary Establishment, Corner of Bay and Temperance Streets, Toronto, C. W.

A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

And also begs to announce that Veterinary Medicines of every description are constantly kept on hand:—Such as, Physic, Diuretic, Cough Cordial, Tonic Condition, and Worm Balls and Powders. The constituents composing the Cough-balls, have been found (by Professor Dick, of Edinburgh) most serviceable in alleviating many of the symptoms of Brokenwind or Heaves in Horses. Colic Draughts, &c., a mixture which owners of Horses should always have beside them.

Liniments for Sore-throat, Sprain, Curb, Spavin, Ringbone.

Blistering Ointments. Liquid and sweating Blisters.

*Horses bought and sold on commission.*

Toronto, Aug. 30th, 1862.

#### FOR SALE!

Ayrshire Cattle, Leicester Sheep, and Berkshire Pigs.

THE Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Specimens from his *Prize Herd* will be on Exhibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.

Aug. 30th, 1862.

6-mos.

#### THOROUGH-BRED STOCK FOR SALE

THE Subscriber has for sale DURHAM and GALLOWAY CATTLE, LEICESTER, COTSWOLD, and LINCOLNSHIRE SHEEP, Male and Female 10 Durham and Galloway Bull Calves—price from \$100 to \$200; 20 Shearling Rams, weighing from 230 to 285 lbs. each—Price from \$5 to \$100 each.

JOHN SNELL,

Edmonton P.O., C. W.

Four miles from Brampton Station G.T.R.

#### EAST RIDING YORK

Agricultural Society Fall Show,  
AT WELLINGTON HOTEL GROUNDS,  
MARKHAM VILLAGE, 9th October, 1862.

All Entries to be made by the evening of the 8th, or to be peremptorily excluded.

A. BARKER,  
Secretary.

#### THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

#### THE PROVINCIAL EXHIBITION

OF THE

AGRICULTURAL ASSOCIATION OF UPPER CANADA,

WILL be held at the City of Toronto on the 23rd, 24th, 25th, and 26th September next.

Persons intending to exhibit will please take notice that the entries of articles in the respective classes must be made on or before the undermentioned dates:—

Horses, Cattle, Sheep, Swine, Poultry, on or before Saturday, August 16th.

Grain, Field Roots, and other Farm Products, Agricultural Implements, Machinery, Manufactures generally, Saturday, August 30th.

Horticultural Products, Ladies' Work, the Fine Arts, &c., Saturday, September 13th.

Prize Lists and Blank Forms for making the entries upon may be had of the Secretaries of all Agricultural Societies and Mechanics' Institutes throughout the Province.

HUGH C. THOMSON,

Secretary Board of Agriculture.

Toronto, August 1, 1862.

## TO BE SOLD BY AUCTION,

On Thursday, Oct. 16, 1862,

**THE** well-known Herd of **NORTH DEVON CATTLE**, consisting of more than forty head of Cows, Bulls, and Heifers; one hundred and seventy West and Southdown Ewes and Rams; pure blooded Essex Pigs, in pairs fit for breeding.

Catalogues of description, with pedigrees, may be had fourteen days before the sale, on application at the office of the *Galt Reporter*, if by letter, prepaid. Credit of 12 months may be had on approved endorsed paper.

## THE SPLENDID FARM,

Consisting of upwards of **THREE HUNDRED ACRES**, to be sold by private bargain, on accommodating terms.

DANIEL TYE.

County Waterloo, Wilmot, August 1862. td

## THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES, FOR UPPER CANADA,

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

## Contents of this Number.

|                                                                                                                                                                            | PAGE.   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Irrigation .....                                                                                                                                                           | 513     |
| The Grain Aphid .....                                                                                                                                                      | 514     |
| Wool and its Prospects .....                                                                                                                                               | 514     |
| Breeding and Rearing Pigs .....                                                                                                                                            | 515     |
| Cultivating mixed varieties of Wheat....                                                                                                                                   | 516     |
| The Atmosphere and the Soil .....                                                                                                                                          | 517     |
| AGRICULTURAL INTELLIGENCE:                                                                                                                                                 |         |
| Agricultural Shows this Autumn .....                                                                                                                                       | 520     |
| Royal Agricultural Society, Ireland .....                                                                                                                                  | 520     |
| Yorkshire Agricultural Society, England ..                                                                                                                                 | 524     |
| Professor Cameron's Lecture .....                                                                                                                                          | 527     |
| HORTICULTURAL:                                                                                                                                                             |         |
| Cultivation of Window Plants .....                                                                                                                                         | 529     |
| Late Grafting .....                                                                                                                                                        | 530     |
| Hollyhocks,—Growing the Tomato .....                                                                                                                                       | 530     |
| THE DAIRY:                                                                                                                                                                 |         |
| Rearing Calves on Milk and Linseed Meal ..                                                                                                                                 | 530     |
| THE POULTRY YARD:                                                                                                                                                          |         |
| A Profitable Hennerly .....                                                                                                                                                | 531     |
| Lice in fowls .....                                                                                                                                                        | 532     |
| Hens Eating Eggs .....                                                                                                                                                     | 532     |
| Production of Poultry and its Produce... ..                                                                                                                                | 532     |
| VETERINARY DEPARTMENT:                                                                                                                                                     |         |
| Umbilical Hernia .....                                                                                                                                                     | 533     |
| Rabies in a Horse .....                                                                                                                                                    | 534     |
| MISCELLANEOUS:                                                                                                                                                             |         |
| Scottish Anecdotes, The Age of our Earth ..                                                                                                                                | 535     |
| Leeks, Garlic, and Onions; Obstacity of the Sea Horse, Grass .....                                                                                                         | 536     |
| Maternal Habits of the Kangaroo, The Newspaper, Concrete Houses .....                                                                                                      | 537     |
| Domestic Service, Animals becoming parents too early, Freak of an Agricultural Locomotive, Absorption power of the Soil, Why you Curse the Seed Stores, &c., &c., &c. .... | 538-541 |
| Editorial Notices, &c. ....                                                                                                                                                | 542     |

## BOARD OF AGRICULTURE.

Office in the New Agricultural Hall, corner of Yonge and Queen streets, Toronto.

HUGH C. THOMSON,

Toronto August, 1862.

Secretary.

## FOR SALE.

**A** LOT of thorough bred **ESSEX PIGS**,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE

# Canadian Agriculturist,

OR

## JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA.

VOL. XIV.

TORONTO, SEPTEMBER 16, 1862.

No. 18.

### The Provincial Exhibition.

The approaching Exhibition of the Agricultural Association of Upper Canada, to be held in this city on the 23rd, 24th, 25th, and 26th inst., promises to surpass all former occasions. Although the entries in some of the departments have not yet been finally completed, sufficient is already known to warrant the conclusion, that in all the principal materials constituting the staple of a general Industrial Exhibition, the one now about to take place will not be found wanting. Although the present season has not been, in some important respects, the most favourable to agricultural pursuits, mainly in consequence of severe and extensive drought, during spring and the early part of summer, the subsequent genial rains and temperature soon produced an agreeable and astonishing change in the backward and languishing vegetation; and we have good reason for expecting to see at the approaching show, superior specimens of roots and cereals, as well as live stock in general.—There will also be several excellent specimens of animals, as well as mechanical productions, of kinds but little known in Canada.

His Excellency the Governor General will make his first visit to Upper Canada on this interesting occasion, who will be accompanied by Lady Monck and family, and also, it is expected, by the Governors of New Brunswick and Nova Scotia. The Local Committee, in connection with the citizens of Toronto, intend getting up a cheap Agricultural Banquet, at which

their Excellencies and other distinguished guests will be present. This will no doubt be a great attraction, and we hope to see many hundreds of our enterprising farmers, merchants, manufacturers, and others, gathered around the festive board, to do honour to the Representatives of Her Most Gracious Majesty on this continent, and the great cause of the agricultural, mechanical, and general industry of this rapidly improving Province. Public meetings will be held in the new Agricultural Hall, on the corner of Yonge and Queen Streets, on the evenings of Wednesday and Thursday of the Show-week, for addresses and discussions on subjects affecting the interests of Canadian agriculture.

### The Grain Aphis.

The following papers, involving somewhat of a controversy on the habits and effects of the Grain Aphis that has appeared in large numbers this season in several parts of Canada, and elsewhere, has been sent to us, and which we insert for the edification of our readers. Our columns are always open to communications whether original or otherwise that have a bearing on Agriculture or the mechanical arts; or that are in any way relate to such industry. We earnestly invite all parties connected or interested in such pursuits to send us concise statements of the results of their observations. It is in this way that truth is elicited and the knowledge of it diffused. Any display of acrimonious feeling in such mat-

ters should be equally deprecated and avoided. The Grain Aphis in some localities has unquestionably been productive of a greater extent of mischief than at an earlier period we had anticipated. Winter wheat as a general rule escaped, but late spring sorts have in some places suffered considerably. The chief injury inflicted consists in the lessening of the weight of the grain. The constant draining of the sap that flows into the ear, causes it to be very light, and in extreme cases, withered and almost worthless. No artificial means of a certain practical character for driving off or destroying this pest have yet been discovered, but nature in this, as in similar cases, has provided external enemies of these extensive tribes of depredators. The lady bugs, *coccinella*, as larvæ and beetles, the golden-eyed flies, *crysopa*, as larvæ, have been the past season in great numbers in wheat fields, busily engaged in devouring the plant lice. Whether they will happen next year is quite uncertain, and the causes of their recent increase are equally involved in obscurity. The army worm appeared in vast and destructive numbers last year, but we have heard little or nothing of it this season. Let us hope it will be the same with this grain aphis next year.

### Plant Louse, (Aphis) or Grain Destroyer.

*To the Editor of the Peterborough Review.*

DEAR SIR—Having heard much of this new and formidable-looking "depredator," I paid a visit on Monday last, to the farm of J. Harvey, Esq., one of our oldest and ablest agriculturists, where, after a careful examination of his crops, we drove to the farm of Mr. Alex. Rosborough, where, in company with Mr. R., we examined his beautiful and extensive fields of grain. Here, as at Mr. Harvey's, we found his Oats and Spring Wheat literally covered with this unwelcome visitor, giving to the heads of the Wheat in some of the fields a most extraordinary checkered appearance of red and green.

The insect, which in size is something less than the midge, presents, when viewed through a glass, a round oblong body of a pale reddish color, without covering and quite transparent; feelers and legs black, and the wings, which were found upon a few of them only, were long, of a greyish color, edged with black. We observed also that the bodies of some of them were of a dark greenish color; the number of these, however, was not very great; and although we discovered neither eggs nor deposit of any kind, we found the insects of various ages

and sizes; the young ones were without wings, or the appearance of any; those further advanced being partially fledged; while those of full growth were fully fledged, and were not long in showing us the use of them, by leaving for parts unknown. Their position upon the grain also attracted our attention, collected as they were in groups, sometimes to the extent of a dozen, heads downward, around the small stem which connects the chaff or husk of the grain with the stalk, and as busily engaged in obtaining their food as were ever a litter of pigs.

Mr. Harvey informed me that the number upon his wheat had diminished within the last four or five days by more than one-half, and that upon entering the field at the period named they would rise up in clouds and leave, proving pretty conclusively their intention of leaving us as soon as fledged.

On our way homewards we looked into several fields of Wheat and Oats, and found them all more or less affected; and I regret to state, upon authority which I believe to be thoroughly reliable, that the attack is very general in this part of the Province.

What amount of damage this heretofore unknown foe may do, is at this moment impossible to determine. That it will be serious I have little doubt. With the Wheat the process of filling appeared to be going on as usual, though I discovered in many places slight discolouration of the husk or chaff. Oats, however appeared to be suffering most; and in one field of Mr. Rosborough's, I believe there is fully one-third destroyed now.

Trusting that our fear may not be realized,  
I am your Obedient Servant,

W. S. CONGER.

Peterboro', Aug., 1862.

### *To the Editor of the Peterborough Review.*

SIR.—There were published in the last impression of the "Review" two communications respecting the appearance, this year, of an insect with whose antecedents but few Agriculturists in Canada seem to be familiar, and whose advent has, in consequence, produced a more or less considerable amount of alarm. The letters are from the pens of Professor Buckland and Mr. W. S. Conger respectively.

Professor Buckland's has been reproduced on more than one occasion since its original publication, and is, in my opinion, so satisfactory, as emanating from such a source, that, although subsequently to its perusal I personally inspected fields of both wheat and oats infested by the insect in question, I scarcely thought any further notice of it, unless some new light could be thrown upon the subject, would prove sufficiently interesting to your readers to encourage you to admit it within your columns; more especially as the "Canadian Agriculturist" of August



16, 1861, and of March 1, July 1, and July 16 of the current year, contains full reports of its appearance and of its operations.

Mr. Conger, however, is of a different opinion, and furnishes us with a very minute description of the insect, and with his melancholy forebodings as to its destructive qualities.

Unable to take for granted that his description is correct, and unwilling that erroneous notions should be circulated without contradiction, I hazard a remark or two in contravention of his assertions and his theories.

Mr. Conger calls the insect in question a "new and formidable looking depredator." If he refers to the "Canadian Agriculturist" of August 16, 1861, he will find that it is by no means new. The author of an article in that number, an article written a twelvemonth ago, says that "it is not probable that it now (1861) makes its appearance for the first time;" and another writer on the same subject in 1846, remarks, "to say that wheat is subject to the presence of *aphides*, or plant-lice, is only to state in the case of wheat what may be affirmed of almost every known produce of our soils." Neither can I admit the correctness of the other double epithet; for to such as are acquainted with it, it wears no very "formidable" aspect; and the writer of the article in the "Agriculturist," above quoted, observes, with respect to its prevalence, that "there is not much cause for concern;" and refers analogically to another species of the same family, the *Aphis fabæ* which attacks, in countless myriads, the bean crops in England, observing, somewhat quaintly, that, notwithstanding, the English "farmers do not find their bean-crops very light."

But Mr. Conger proceeds with his entomological disquisition. After describing the form and color of his louse, as "viewed through a glass," he says, "although we discovered neither eggs nor deposit of any kind, we found the insects of various ages and sizes; the young ones were without wings, or the appearance of any; those farther advanced being but partly fledged; while those of full growth were fully fledged." There is a "Natural History Society" established in Montreal. Should the eye of any member of that Society, be fortunate enough to fall on Mr. Conger's description, that gentleman will doubtless, at the next meeting of the Society, be nominated for the honor of Fellowship. Meantime I venture, with great humility, to suggest, that the *Aphis* is *viviparous* as well as *oviparous*, and that, therefore, if I am correct, it need scarcely excite much surprise that, although young *Aphides* were found, the broken egg-shells which the observer ought, he thinks, to have discovered, by the help of his "glass," were imperceptible. Again, as to the "unfledged," "partially fledged," and "fully fledged" *Aphides*, I once more, almost tremblingly, hint that while some of those interesting insects are

evidently possessed of wings, some also, the greater number, are what is called *apterous*, or wingless, and never succeed in raising those appendages. The winged females never, I believe, lay eggs, but produce their young alive.

Many other matters of interest there are connected with the family of *Aphides*, of which, by the bye, there are at least 70 species; but the limits usually assigned to a newspaper letter forbid any greater enlargement upon the subject.

I therefore, in conclusion, direct attention to Mr. Conger's lugubrious, and, I trust ill-founded, peroration; his peroration is a bane to which Professor Buckland's letter provides the antidote.

But, for the remedy? None is known, you say. Recollect, and I write the words with a feeling of profoundest reverence, that "The things which are impossible with men are possible with God." He who inflicts the disease furnishes the means of cure. He whose "great army" is "the locust, the canker-worm, and the caterpillar, and the palmer worm," can, when he sees fit, withdraw those forces, or cause them to be overcome. This *Aphis*, so much dreaded, has enemies more fatal to its existence, than are its own attacks upon the crops. The *Ant* will carry the living *Aphis*, insect after insect, to its subterranean cavern, and keep them there, stalled as it were, to feed upon their honey like excretions. The *Ichnumon* plunges her ovipositor into the body of the *Aphis*, and therein deposits her eggs, many *Aphides* being thus converted into hatching-places by a single fly. The little beetle, popularly known as the *Lady-bird*, is an insatiable devourer of *Aphides*; as also are other insects, in addition to numerous birds. So that these Plant-lice being peculiarly inactive, seldom, as I believe,—or believed till I read Mr. Conger's graphic account of their air-borne propensities, their fleeing to "parts unknown," which "parts unknown" are, I apprehend, the stomachs of their above named foes—making use of their wings, and as they are pursued incessantly and perseveringly by enemies so voracious that one single fly called *musca aphidivora* requires at least thirty *Aphides* to enable him to feel a comfortable, after-dinner lassitude, I think I may take the liberty of endorsing Professor Buckland's opinion, and of offering it to the attention of the Peterboro' Farmers, in opposition to that of Mr. Conger.

I am, sir,

Your obedient servant,

B. A.

Peterboro' August 16, 1862.

TO THE EDITOR OF THE REVIEW.—Dear Sir, —I observe that your correspondent B. A., has taxed his time and ingenuity in criticising my letter on the appearance of the Plant-Louse, published in your paper of the 15th inst. In the exercise of that right B. A., has in my opin-

ion shown a desire to indulge in a little ill-natured sarcasm which might as well perhaps have been omitted, and has attempted to draw conclusions from my letter which its language does not warrant; while the over-weening pedantry, and spirit of dictation displayed throughout his whole communication is quite in keeping with the well-known character of its author. Witness, for instance, his *excessive modesty* when he says that *he* did not, after reading Professor Buckland's letter, consider further notice of the subject necessary.

It may have been an act of presumption on my part to write, and of you to publish anything on the subject of Entomology without B.A.'s consent, but a long indulged habit of seeing, thinking and forming opinions for myself has become so strongly engrafted upon my nature that it is more than probable I shall continue to do so, regardless of whether such opinions are in unison with those of B. A. or not.

B. A. commences by saying, that "he had read the communications of Professor Buckland and myself, respecting the appearance, this year, of an insect with whose antecedents *but few agriculturists in Canada seem to be familiar*, and whose advent has, in consequence, produced a more or less inconsiderable amount of alarm," and proceeds to say that Professor Buckland's letter was so satisfactory to him, as emanating from such a source, that he scarcely thought further notice of it necessary. Why this change of mind? Let us, however, before we proceed further, examine the letter of Professor Buckland, and ascertain what those opinions were which gave to this distinguished author and critic, such unqualified satisfaction as to induce him to offer them with *his endorsement* to the farmers of Peterborough in opposition to mine, and see in what particular they differ from those I have ventured to express.

"In hops," says Professor Buckland, "the Aphis is often very destructive, but among grain its devastations are seldom of an alarming character, although in appearance the vast numbers seem *exceedingly formidable*. I have often seen fields of the horse bean in England," says Professor B. "very much affected by the Aphis, and yet a pretty good crop has been obtained,—*no doubt their presence* is generally *more or less injurious*, but nothing like Midge or Hessian-fly. *I am in hopes* that you and your neighbours will not find it *this year* so injurious in the result as present appearance may seem to indicate; as to remedy we are almost powerless, the insect appears to be a *new comer* in your part of the country."

So much for Professor Buckland's letter and opinions. In my letter I spoke of the insect as a "new and formidable looking depredator," and in my concluding paragraph said: "*what amount of damage this heretofore unknown foe may do is at this moment impossible to determine*, that it will be serious I have little

doubt."—And pray how much less has Professor Buckland said? Has he not also declared these insects to be *destructive, formidable* in their appearance, and beyond doubt, *injurious*. And yet, notwithstanding the great similarity of opinion expressed in the letters of Professor Buckland and myself, B. A., with his usual regard for truth and fairness, approves of the one and condemns the other.

But suppose for a moment that Professor Buckland's opinions—which were given on the 20th of July, before the insect had shown itself in any great force—had in some measure differed from those I ventured to express as the result of an examination made by Mr. Harvey and myself, on the 11th of August at a time when these insects were most numerous. Would it in any way have affected my statement? And were we not at that time in a better position to judge of the probable effect they would produce upon the crops than those whose examinations were made three or four weeks before at a time when the insect first made its appearance?

B. A. also questions the correctness of my description,—though he does not venture to say in what particular I have erred. In reply to this I may simply state that while I make no pretensions to the science of Entomology, I challenge B. A. or any one else who has made similar examinations, to show wherein I am wrong. My description of the insect and its operations upon the fields of grain we visited, was given precisely as we saw it, and as it then appeared, omitting entirely to notice any of the fine drawn theories of Naturalists as to its nature and habits. Leaving such of your readers as are desirous of obtaining more minute information to consult the writings of Reaumer, Kirby, Curtis, Dr. Fitch or Professor Hind, where they could find all they desired quite as well as if *reproduced* by B. A. or myself. It is true I did not fill my communication with high sounding words selected from works upon the science of Entomology. But I believe I made myself understood by that class of your readers who are most interested in the matter. And although on the occasion of which I speak, I had not the assistance of those brilliant eyes which B. A. says "assisted him in watching the operations of his diminutive *grave digger*," yet I had the assistance of two experienced and highly intelligent farmers, quite as able to judge of what they saw, and what I attempted to describe, as Professor Buckland himself, and who fully concurred in the views I expressed.

In conclusion I will give you for B. A.'s especial benefit, the following opinions of Professor Hind, whose essay on the Weevil and other grain destroyers obtained the first prize in 1857.

Professor Hind in his admirable essay speaking of the Aphis, say: "The wonderful fertility of this tribe of insects exceeds that of any known species, and elevates them to a position in the scale of pests and plagues which secures for



them the *second* if not—in many temperate climates—the *first place* among insects depredators. A few weeks is sufficient to convert a handful of these viviparous and oviparous insects into countless legions, which, taking flight, *darken the air with their numbers.*" I must also, before closing this already long letter, respectfully advise B. A. to extend his reading, and before he again ventures upon unknown ground, to understand his subject.

As for his sneer about the chances of my being offered a fellowship in the society of Natural History, he will permit me to say that it is possible my chances are quite equal to those of the *learned delineator of the insect "grave digger,"* and would be Professor of Entomology.

I am your obedient servant,

W. S. CONGER.

Peterboro, 26th August, 1862.

P. S.—Since writing the above I have seen many farmers, and regret to learn from them that the fears I expressed in my letter of the 15th inst., as to the probable damage the "Aphis," or Plant-Louse, would inflict upon the crops in this part of the country, are likely to be more than realized, and persons who at that time considered their grain uninjured, have during the last few days, while harvesting, discovered that their oats and spring wheat have suffered seriously.

Yours,

W. S. CONGER.

Peterboro', 30th Aug., 1862.

### Chinese Sugar Cane.

DEAR SIR,—In looking over the Prize List of the approaching Exhibition, I regret to notice that no prize is offered for an agricultural product now becoming one of the most important staples of the Western States, and which might, if encouraged, become a most important addition to our provincial produce and manufactures;—I refer to the *Chinese Sugar Cane or Sorghum*, which grows wherever Indian Corn may be cultivated.

I have seen it stated in late American Newspaper that in one State, either Illinois or Indiana so much has been raised of Sorghum during the present year, that the wants of the population, for Syrup, or Sugar, (or both) will not only be supplied, but that there will be a surplus for exportation. Throughout the entire west, during the year, no less than about 50,000 acres are said to have been occupied by this comparatively new plant. I have tested its growth in this Province and am convinced we could raise it to advantage as well as our neighbours in the West. Syrup and Sugar are of universal consumption, and I have no doubt every farmer who can raise Indian Corn, can raise the cane to supply his own syrup or sugar. We want the machine for crushing the cane, and the apparatus

for evaporating the sap or juice, but these can easily be produced, as they now form ordinary articles at the west. I regret that this important product of the soil has escaped the notice, or failed to excite the interest of the managers of the affairs of the Provincial Exhibition.

I beg also to refer to some agricultural machinery or implements which do not appear in the List, but which seem to me of considerable importance to farmers generally.

1. A good cheap Horse-Power for *one or two horses* for ordinary farm purposes.

2. A simple machine for sowing Lime, or Plaster by horse-power.

2. A simple but effective machine for sowing Turnip, Carrot, Parsnip, Mangelwurzel seed &c. in two drills at once, by horse-power.

The proposed erection of a Sugar Refinery in Toronto, by Mr. W. Molson, of Montreal, might, in my opinion, greatly facilitate the growth of the Chinese Sugar Cane in the County of York or the neighbouring counties, as farmers could conveniently exchange their home-made syrup for sugar, which I believe is commonly done in the west wherever there is convenient access to a sugar refinery. The sap of the Sorghum contains, I learn, about five times the amount of Saccharine found in the Maple, and the manufacture of the syrup is a rapid and simple process and from 200 to 300 gallons may be produced from an acre

I am, my dear sir,

Yours respectfully,

JAMES LESSLIE.

E. W. THOMSON, ESQ.,

President Board of Agriculture, U. C.

Toronto, 29th Aug., 1862.

### REMARKS.

[The Board of Agriculture is always glad to receive suggestions of the character of the above, and feel grateful for them. We shall be happy to receive communications from our readers who have had experience in the culture of the Sorghum, and of its conversion into syrup and sugar. The other subjects to which Mr. Lesslie refers shall not be lost sight of. It has always been the practice of the Board at the annual Provincial Exhibitions to notice and give extra prizes to articles of merit, although not enumerated in the prize list. Eds.]

### Woods at the International Exhibition.

(From the Mark-Lane Express.)

One of the most extensive and interesting of the numerous collections now on view in the International Exhibition is certainly that of the woods, sent from so many countries and climates and from far separated districts. A complete

analytical examination of these would be of the greatest importance in the interests of manufactures and commerce. The British Colonies, Asia, and Africa, North and South America, and the various European States, all contribute of their forest wealth, adapted for the many convenient purposes for which wood is in demand. Much as Iron has come into use of late years to take the place of wood for ship building, it has not yet entirely replaced it; and there is still a large, and indeed, increasing demand for wood for lining the great iron-cased war vessels which recent invention has brought into play.

In the absence of any useful work on the products of the forests of the globe, to which reference can be made, it will, we think, be found exceedingly useful to advert from time to time to the series of woods which have been collected at much trouble and cost, to be displayed to the eyes of the world at South Kensington. These specimens may not, it is true, be very attractive or interesting to the mere idler and sight-seer at the Exhibition unless per chance he be struck with surprise at the huge dimensions of some section of a monarch of the forest, the growth of several hundred years; the great length of some planks, like those of Western Australia and Tasmania, shown in the gardens of the Royal Horticultural Society; or the picturesque timber trophy of Canadian woods, erected in the north-eastern transept, towering upwards to the roof. But, as indications of the soil, as mementoes of indigenous wealth, open to the axe of industry as materials for the use of the skilled mechanic and artificer, these collections of wood open up one of the most instructive fields for investigation, and will diffuse much that will supply thought hereafter. Capt. Fowke, R. E., who has already published some most interesting results of experiments on the strength and properties of colonial and other woods shown at the Paris Exhibition in 1855, is now conducting at the South Kensington Museum a daily series of tests on many of the woods exhibited; the published results of which will be of great importance.

Of the British colonies, Canada stands out most prominent in the collection of woods, and the colony on this occasion, with limited funds at command, has done well to confine itself chiefly to a noble display of her vegetable and mineral treasures. There are several collections of wood shown; and although they are more characterized for utility than for beauty, yet they are such woods as could not be done without; and our Australian and tropical colonies come in, too, with furniture and cabinet woods generally. It affords us much gratification to learn that an effort is making on the part of the representatives of the various colonies to establish by colonial aid, a permanent museum of colonial products; and from the unanimity with which the movement has been originated, there is every probability of its success, and of the most valuable collection now on view being re-

tained in tact. The usefulness of such a museum to the manufacturer, the artisan, the emigrant, and indeed to all interested in the progress of our colonies, will be generally admitted; and while France with but five or six colonies has long maintained such a colonial museum, it does seem singular that Great Britain, with its fifty important colonies, spread over every part of the globe, should not long since have had such a collection, instead of being obliged every five or ten years to have to go to enormous expense in forming collections which immediately after are sold and disposed of and lost to the world.

New Brunswick, considering her forest resources, has not produced so good a display of woods as she might have done, although there are some very fine ornamental illustrations. British Columbia and Vancouver have done as well as could be expected from their great distance and the expense of transit of large specimens—the planks and sections of the Douglass pine and other giants of the forest indicate one of the sources of colonial wealth.

The Australian colonies have all come out well in a display of their woods—and it is hard to award the palm. New South Wales, Queensland, Victoria, Tasmania, Western Australia, and New Zealand, all show very fine specimens of their woods in all stages—rough, polished and manufactured. Ceylon shows some of her beautiful furniture woods and their applications. India has not done so much as she might have done, but she is circumscribed for space to exhibit the noble sections of wood lying at Eyfeshouse, the India gallery being chiefly occupied with works of art more attractive to the general public. Mauritius, St. Helena, and a few other small colonies have a fair display of woods; and Natal stands as the representative of Southern Africa, and proves that there are some useful woods to be found in that quarter.

Passing to the West India group of colonies, we find that great efforts have been made on this occasion to develop its woods and bring them into public notice, and the beneficial result of this effort cannot fail to be felt. The ornamental woods of Jamaica, of Trinidad, and British Guiana have taken the public by surprise and the cabinet work made of them is of singular beauty, and we do not wonder that these woods have been highly commended and rewarded by the juries. British Honduras, Dominica, and some of the smaller islands have also turned their attention, we hope with profit, to a collection of their indigenous woods, with information of their properties and uses. The valuable squared logs of mahogany shown in the Haytian court, the woods of Europe, Algeria, and the French colonies, are all the evidences of the dormant wealth yet available, although settlement and the progress of population are making greater havoc among the forests than the forethought of individuals or governments is replacing by replanting.



### On the Cultivation of Wheat in Canada. and on the Season of 1862.

In the July and August numbers of this Journal we noticed the "Home Manufactures of Canada," and the "Use we make of our Mineral Resources," we now propose to devote a few pages to the Industry of the Soil, and the Manufactures which are dependent upon a constant and cheap supply of grain. In collecting material for this subject, the extraordinary fluctuations in the production of wheat in Lower Canada came so prominently into view, when contrasted with the rapid and steady increase in Upper Canada, that we were led to devote more space to this important subject than would appear to belong to the pages of this Journal, and our notice of "the Cultivation of Wheat in Canada and of the season of 1862," has swelled to a far greater extent than was anticipated, when a mere introduction to the condition of different manufactures in the Province, dependent upon a supply of rye, barley, wheat, and Indian corn was in contemplation.

There are many important questions which require solution, with respect to the cultivation of Wheat in Canada.

Two facts are patent to all from the results of the last census. These are:—

First; The cultivation of wheat is rapidly diminishing in Lower Canada, and the quantity raised does not amount to one-half what is required to feed her population, assuming that each man, woman and child consumes five bushels only per annum.

Second; The cultivation of spring wheat is rapidly increasing in Upper Canada, and more than twice the quantity of land is devoted to spring wheat than to fall wheat.

With regard to the first statement—namely the diminution in the cultivation of wheat in Lower Canada—we find that section of the Province formerly exported a very considerable quantity of wheat, the produce of her own soil. The following table shows the exports of wheat from Quebec between 1793 and 1802, inclusive;

| Year.      | Wheat, bus. | Flour. | Biscuit, cwt. |
|------------|-------------|--------|---------------|
| 1793.....  | 478,900     | 19,000 | 9,800         |
| 1794.....  | 414,000     | 13,700 | 15,000        |
| 1795.....  | 395,000     | 18,000 | 20,000        |
| 1796*..... | 3,106       | 4,300  | 3,800         |
| 1797.....  | 31,000      | 14,000 | 8,000         |
| 1798.....  | 92,000      | 9,500  | 12,000        |
| 1799.....  | 129,000     | 14,400 | 21,500        |
| 1800.....  | 217,000     | 20,000 | 25,000        |
| 1801.....  | 473,000     | 38,000 | 32,000        |
| 1802.....  | 1,010,033   | 28,300 | 22,051        |

In 1802 the population of Upper Canada did not exceed 60,000 souls, and there is no reason to suppose that that part of the Province contributed much wheat for export previous to 1802.

\*The exportation of wheat was prohibited this year, in consequence of the bad crops of 1795.

The frontier States of the Union did, no doubt, contribute flour and wheat "in casks." We will therefore strike out from the above table all the exports of flour and biscuits, and credit them to the frontier States and Upper Canada, amounting to 855,500 bushels wheat, and 169,451 cwt. biscuit, from 1793 to 1802, a period of ten years.

With these deductions, the total quantity of wheat of Lower Canada growth exported between 1793 and 1802, amounted to 3251,139 bushels, or at the rate of three hundred and twenty-five thousand bushels per annum.

The quantity of wheat raised in Lower Canada in 1827, '31, '44, '51 and '60 was as follows, showing no increase, but, in proportion to the population, an extraordinary and indeed alarming decrease:

| Year.      | No. of bushels. |
|------------|-----------------|
| 1827 ..... | 2,931,240 (1)   |
| 1831 ..... | 3,404,756       |
| 1844 ..... | 942,835         |
| 1851 ..... | 3,045,600 (2)   |
| 1860 ..... | 2,563,144 (3)   |

The quantity required to feed the population of Lower Canada, at five bushels per head, the usual allowance, is 5,553,320 bushels. Hence the people of Lower Canada, if they consumed wheat after the manner of their forefathers, would require an importation of not less than 2,990,206, or nearly three million bushels.

Nor is this decrease compensated by the production of other kinds of grain in due proportion. The total amount of barley, rye, peas, oats, buckwheat and Indian corn, raised in 1851, amounted to 12,147,000 bushels, and in 1860 to 23,534,903 bushels; † an increase of 11,387,533 bushels—not in fact even doubling in ten years, while during the same the population increased from 890,271 to 1,110,664 souls.

The comparison between Upper and Lower Canada stands thus in relation to population and the production of the following articles:

|                                                                   | Upper Canada. | Lower Canada. |
|-------------------------------------------------------------------|---------------|---------------|
| Population, 1851 .....                                            | 952,004       | 860,261       |
| " 1861 .....                                                      | 1,306,091     | 1,110,664     |
| Wheat crop of 1860, bus 24,620,425                                |               | 2,563,114     |
| Indian corn, rye, oats, }<br>barley, buckwheat }<br>and peas..... | 36,122,340    | 23,534,903    |

Total bus. grain in 1860.....60,742,765 26,098,017

Proportion of grain produced in Upper Canada to each inhabitant, 43 bushels.

Proportion of grain produced in Lower Canada to each inhabitant, 23 bushels.

The change is astonishing which has taken place in Lower Canadian husbandry during the

(1) Bouchette. (2) Census 1851-'2. (3) Mr. Galt's Budget Speech.

† Mr. Galt's Speech.

last half-century, and is certainly worthy of special study, and even of the attention of the Government. When a province which once was a large exporter of wheat becomes incapable, under her present system of husbandry, of raising one-half of the quantity of a staple product of human food necessary for home consumption, questions of much moment arise. Does it result from a change in the climate from insects destructive to wheat crops, exhaustion of the soil, or bad farming practice? No doubt, more or less, from all of these causes united; but we must chiefly look to the manner in which the soil is cultivated, and the practice prevailing in Lower Canada, for the solution of this problem.

Turning now to Upper Canada, we find the following encouraging statistics:

| Year.      | Wheat produced in bush |
|------------|------------------------|
| 1842 ----- | 3,221,991              |
| 1848 ----- | 7,558,773              |
| 1851 ----- | 12,674,503             |
| 1860 ----- | 24,620,425             |

In some counties in Upper Canada the cultivation of wheat is progressing with extraordinary rapidity (too rapidly, we fear, for good husbandry), as the following comparative table, showing the produce of the United Counties of York, Ontario and Peel for the years 1848, 1850, 1851 and 1860, will tend to show:

| Produce. | 1848.     | 1850.     | 1851.     | 1860.     |
|----------|-----------|-----------|-----------|-----------|
| Wheat    | 1,451,384 | 2,038,676 | 2,362,932 | 3,469,002 |

The United Counties of York, Ontario and Peel produced in 1860, as much wheat as Lower Canada in 1831, and nearly one million more bushels than Lower Canada in 1860.

We would remind those among our readers who are inclined to the view that the Wheat Midge and the Hessian fly are pre-eminently destructive in Lower Canada, that by the use of early-ripening seed, draining, and improvement in farming practice, the "fly" has been overcome in many parts of Upper Canada, and there is no fear that with the adoption of well-known artifices the ravages of these destructive insects will be held in check. And why we ask, might not the same artifices have been employed in Lower Canada, which have proved so successful with us! Probably an answer will suggest itself when we compare the number and circulation of the newspapers published in the French language, with the number and circulation of the same means of diffusing information in the English tongue in Upper Canada. It is a question, we submit, which might reasonably engage the attention of the Minister of Agriculture, whether an enquiry should not be set on foot to obtain information respecting the cultivation of wheat in Lower Canada, and the best means of circulating a knowledge of the most successful remedies against the ravages of the Midge and Hessian fly, which are so generally instanced, and, we think, most erroneously, as the ineffic-

able destroyers of the wheat crops in Lower Canada, whose wide-spread devastations it would be vain to attempt to arrest.

The present year has been remarkable for the infinite number of insect-pests which have infested the wheat crops, but fortunately without, as far as we can learn, occasioning any wide-spread damage.

The insect which created the greatest alarm at one time was an *Aphis*, a very common and most prolific creature, whose powers of multiplying itself almost surpass belief, and furnish us with one of the most astonishing marvels of insect life, out of the vast number by which we are daily surrounded. If the reader has noticed the extremities of the shoots of currant bushes during the latter part of August and the beginning of September of the present year he will have observed, no doubt, a vast number of green and brown insects feeding on the leaves, causing them to curl up, and often assume a dark or a bright colour according to the stage of insect growth. The green and brown insects are *Aphids*, similar to those which were found in such infinite numbers upon the succulent parts of the wheat and many other plants where they are not commonly observed during the early part of the summer.

The *Aphis*, or Plant Louse, is a name given to a very extensive genus of insects, whose destructive habits and wonderful productiveness make the study of their history especially interesting to farmers and gardeners. Certain species of *Aphids* affect different plants. Dr. Fitch describes twenty-eight species, which feed upon the juices of Indian corn, the pear, apple, cherry, and a number of other trees. In the collection of the British Museum no less than 326 species of this insect are described, and it is worthy of notice that almost every species of plant has its own peculiar *Aphis*. The Hop-fly and Bean-dolphin have occasioned immense destruction in Britain. In 1802 the hop duty fell from £100,000 to £14,000 on account of the great increase of the *Aphis*. When the *Aphis* has been absent the duty has risen to £500,000. This insect is well named the *APHIS* or *EXHAUSTER*. They are so prolific that one individual may become the progenitor of one quintillion in the 10th generation. As many of our readers may not be quite familiar with the vast number represented by the word 'quintillion,' some details may be useful. Professor Owen shows in his lectures on 'Comparative Anatomy,' that the *Aphis lanigera* produces each year ten viviparous broods, and one which is oviparous, and each generation averages 100 individuals:—

|                |                                         |
|----------------|-----------------------------------------|
| 1st Generation | —1 <i>Aphis</i> produces                |
| 2nd "          | —100 One hundred                        |
| 3rd "          | —10,000 Ten thousand                    |
| 4th "          | —1,000,000 One million                  |
| 5th "          | —100,000,000 One hundred m.l.           |
| 10th "         | —1,000,000,000,000,000 one quintillion. |



The Aphids which appear in Spring are exclusively females, no males being found till the Autumn. It is not necessary for the young females produced during the Summer to pair with a male; yet these females go on producing each 25 day of living young ones, all of which become in a short time as fertile as their parent.

It does not come within the province of this Journal to describe more in detail the habits of these insects, but to those of our readers who are interested in this curious subject we may refer them to the following accessible works, in which they will find much valuable information:—

1. First and Second Report on the Noxious, Beneficial, and other Insects of the State of New York. By Asa Fitch, M.D.
2. Harris on Insects. New Edition.
3. The Farmers' Encyclopædia. By Cuthbert Johnson.
4. The English Cyclopædia.
5. Stephens' Farmers' Guide.

The question naturally arises, why were these insects so numerous during the present year? The cause is to be traced, very probably, to the extraordinary dryness of the spring months of 1862.

The Aphis multiplies much faster in a dry season than in one which is humid; like the red spider, and many other destructive insects, it is fond of a warm and dry atmosphere. The month of May was extremely dry, and the quantity of rain recorded at the Toronto Observatory was only one third of the average which has fallen in that month for twenty two years.

The month of June was also remarkably dry, the amount of rain which fell reaching only one third of the average of twenty-two years, and it was the driest June which has occurred during the entire period in which observations have been made at Toronto. Fortunately for the wheat and other crops July was extremely wet, having nearly double the average fall of rain, so that not only were the crops pushed forward by the unusual moisture of the earth, but an innumerable host of insects were washed off the leaves of the growing crops by the heavy and continuous fall of rain. By the most unusual and providential fall of rain in that month the multiplication of the Aphis was arrested and the crops of the country saved. It will be noticed throughout Canada, that in general the fall wheat has been harvested at an average time of the year—the spring crops are later than is common with us. The fall wheat was sustained during the long drought by the great amount of moisture in the soil at the advent of spring, from the excess of snow and rain which fell in February and March. In March we had one inch more rain and nearly ten inches more snow than the average of twenty-two years.

The retardation in the growth of spring crops arising from the dryness of May and June has probably been of immense value to the country

in destroying the Midge. That this insect was very abundant in many parts of Canada during the present year there is no reason to doubt; observations in many different quarters have recorded its presence in infinite numbers, but the fly appeared before the wheat was ready to receive it, and its eggs were deposited where there was no suitable food for the young worms when hatched; myriads would consequently die for want of food, and therefore we may look upon the unusually dry spring of 1862 as having been a blessing of incalculable value to the Canadian Farmer by destroying one of the worst and most widely distributed enemies of his wheat crops. The maggots of the Midge were also seen in vast numbers in the fall wheat, but generally it was too far advanced for them to injure it to any considerable extent. The fall wheat was suddenly pushed forward by the July rains (which at the same time destroyed the Aphis) and the Midge could not penetrate the chaff or sheath to deposit its eggs, or if it succeeded in penetrating the germ the young worms were hatched after the grain had been formed. Although this year has been one of most exceptional character in relation to the distribution of snow and rain, yet when viewed in the proper light it will afford a striking illustration of that wise and merciful beneficence which disposes and adjusts all things for some excellent purposes, which do not appear to our eyes until the object for which the disposition was made is attained, and sometimes not even then.

The following table from the records of the Provincial Observatory has been kindly furnished by Professor Kingston—an examination of its contents will show the extraordinary character of May June and July of the present year.

|                         | May.  | June. | July. |
|-------------------------|-------|-------|-------|
| Mean Temperature 1862   | 52.17 | 60.52 | 66.70 |
| Average for 22 years .. | 51.39 | 61.36 | 66.85 |
| Difference from average | x0.78 | —0.1  | —0.15 |

|                         | Inches. | Inches. | Inches. |
|-------------------------|---------|---------|---------|
| Depth of Rain, 1862 ..  | 1.427   | 1.007   | 5.344   |
| Average of 22 years ..  | 3.241   | 3.100   | 3.490   |
| Difference from average | —1.814  | —2.093  | x1.854  |

|                         | Days. | Days. | Days. |
|-------------------------|-------|-------|-------|
| No. of Rainy days 1862  | 8.0   | 10.0  | 15.0  |
| Average of 22 years ..  | 11.3  | 11.9  | 10.0  |
| Difference from average | —3.3  | —1.9  | x5.0  |

May, 1862, was mild, and extremely dry, but it was thrice surpassed in that respect: it only records one-third of the average depth of rain.

June, 1862, was comparatively cold and extremely dry, the depth of rain recorded only reached one-third of the average; it was absolutely the driest June during the last 23 years.

July, 1862, was comparatively cold and extremely wet, showing nearly the double the aver-

age depth of rain, it was only once surpassed, viz. in 1841 when the depth recorded amounted to 8.150 inches.

A comparison of the foregoing with the corresponding months of the several years may be made by referring to the comparative tables that accompany the monthly reports for May, June, and July, 1861, published in the *Canadian Journal*.

A glance at the following table will show how dependent the prosperity of the country is upon a good harvest. It will be seen that the difference between the agricultural exports of 1856 and 1857 amounted to more than six millions of dollars, and that our exports last year exceeded those of 1857 by ten millions of dollars.

*Table of the absolute value of all Agricultural products exported, exclusively of Canadian growth, for the years 1853 to 1861, inclusive.*

| Year.      | Value of Ag. Exports | Year.      | Value of Ag. Exports |
|------------|----------------------|------------|----------------------|
| 1853 ..... | \$8,032,535          | 1858 ..... | 7,904,400            |
| 1854 ..... | 7,316,160            | 1859 ..... | 7,339,798            |
| 1855 ..... | 13,130,399           | 1860 ..... | 14,259,225           |
| 1856 ..... | 14,972,276           | 1861 ..... | 18,244,631           |
| 1857 ..... | 8,882,825            |            |                      |

In our next issue we shall endeavour to exhibit the use we make of a considerable portion of our rapidly increasing grain crops and show how closely dependent many important manufactures in Canada are upon a good harvest.—*Journal of Board of Arts and Manufactures.*

## A Drop of Rain-Water.

BY CUTHBERT W. JOHNSON, ESQ., F. R. S.

We are often, but erroneously, said by foreigners to be far too attentive to the weather—that it is too often the leading topic of our conversation; but if the remark had any foundation it is hardly a matter of surprise, as we have more reason than most nations for having our thoughts thus directed; we are more dependent upon the weather for our food than those blessed with more certain seasons; our corn, our vegetables, our fruits, are all natives of other and warmer lands; we can only preserve by very great care and skill what nature spontaneously produces in more southern soils, and under a more serene climate. We are all, therefore, whether gardeners or agriculturists, deeply interested in atmospheric transitions in temperature, and in the degree of moisture to which our plants are exposed. It is but rarely, however, that we inquire of the *origin* and *history* of the meteorological phenomena which encircle us. The research might, however, be attended with more profit than we may at first suspect. It is with that conviction that I propose in this and a subsequent paper to endeavour to trace the history of a drop of rain-water.

The *origin* and *progress* of a drop of rain water is a history of many things which relate not only to our comfort and enjoyment, to the growth of the vegetable world, but to our very existence. We do not commonly inquire about such matters; we have always been used to see the rain descend; there is nothing novel about it, to cause us to search as to its history—why it falls upon our fields, whence it comes, or where that water proceeds in its course when it disappears in the earth from our sight? We do not engage in such examinations, because the phenomenon is neither novel nor startling; the fall of a meteoric stone arouses more attention, although we can neither discern its origin nor its usefulness, than all the rain-drops, which we well know spread the oil of fatness so continuously over our fields. Could our lot have been cast in a totally rainless district, like that of the Chincha or Guano Islands, on the Peruvian coast, our wonder would have been considerably excited when first placed in a shower of rain—our inquiries about its origin more fervid, our gratitude to its great Author more deep. It may be more useful, then, if we travel together with an imaginary inquirer of this kind, who has everything to learn with regard to a drop of rain-water, and is anxious to find its origin, its nature, and why and whence it disappears or evaporates.

The size, shape, the composition of a drop of rain seems to be naturally the first portion of our inquiry. Its size varies: from the very smallest, say 1-24th to about  $\frac{1}{2}$  of an inch in diameter; its shape is spherical. An early reflection presents itself when we are considering the size of a drop of rain,—the beneficence of its Divine Architect in adapting the weight of those rain-drops to the wants and safety of His creatures. Falling as they do from a great elevation, they descend with a force which, had they been considerably larger, would have spread death and destruction in every shower. We all know the painful effect produced upon our heads by a rapidly-descending current of water, or when a few small drops of rain are congealed together by a low temperature as they descend from the clouds, and hailstones formed. In our driest summers, it is true, we may desire, in figurative language, “*torrents*” of rain upon our languishing crops; but no one wishes to receive rain-drops as large as turnips, or rain falling in columns. A prayer for a hailstorm was perhaps never yet uttered. We see, then, that even the rain-drops were weighed by their Divine Author, their gravity adapted to the powers and good of His creatures, and the bed of earth on which they were to descend and fertilize. The mean annual fall of rain on the entire surface of the earth is estimated at about five feet (Maury, *Phy. Geo. Sea*, 207); but the amount of the average annual fall of rain varies, however, widely in different countries, from the districts



of the Andes, where the rain rarely ceases, to those not a hundred miles distant, around Lima where rain is almost unknown.

In our quarter of the globe, the annual rainfall varies with different countries, altitudes, and exposures to moist westerly currents. At Madrid, which is placed on an elevated plateau, the annual rainfall is only about 10 inches. At Coimbra, in Portugal, a fall of more than 200 inches has been recorded. Extraordinary rainfalls have occurred occasionally in the South of Europe. On October 25, 1825, 32 inches fell at Genoa, and October 9, 1827, at Joyeuse, in the South of France, 31 inches fell. In the East Indies 13.06 inches fell at Mahabuleshwur, September 2, 1833; but 11 or 12 inches is not rare. In July, 1840, 134.42 inches fell at that station. At Bombay, July 1, 1844, 7.44 inches fell in twenty-four hours, 2 inches falling in seventy minutes (*ibid*, p. 366). In England our rainfalls do not nearly approach amounts like these. Mr. E. J. Lowe has recorded the most rainy months and days at Beeston, near Nottingham, from 1843 to 1857:—

## MOST RAINY MONTHS.

|                       | Inches. |
|-----------------------|---------|
| 1852, November .. ..  | 7.0     |
| 1252, September .. .. | 5.3     |
| 1849, September .. .. | 5.0     |
| 1847, May .. ..       | 5.0     |
| 1853, June .. ..      | 5.0     |

## MOST RAINY DAYS.

|                          |       |
|--------------------------|-------|
| 1843, August 9 .. ..     | 1.095 |
| 1846, October 19 .. ..   | 1.300 |
| 1847, May 8 .. ..        | 1.645 |
| 1848, June 18 .. ..      | 1.055 |
| 1848, September 28 .. .. | 1.155 |
| 1849, July 25 .. ..      | 1.084 |
| 1850, July 24 .. ..      | 1.106 |
| 1851, July 26 .. ..      | 2.063 |
| 1852, September 6 .. ..  | 2.044 |
| 1853, August 17 .. ..    | 1.502 |
| 1855, July 14 .. ..      | 1.060 |
| 1857, June 30 .. ..      | 1.590 |
| 1857, August 13 .. ..    | 8.010 |

In our country, the smallest rainfall is in Essex, which hardly averages 20 inches. The largest is in the westerly counties, where it ranges from 35 to 46 inches. On some of the mountains in Westmorland 108 to 148 inches have been recorded in one year.

## ITS ORIGIN AS VAPOUR.

Having noted the fall of rain—seen it descend from the clouds—the next portion of our inquiry is. How did that rain water get into the atmosphere? We need hardly be reminded that it was by the evaporation of water from the earth's surface. "To evaporate," observes Maury, in his valuable work on the Physical Geography of the Sea, "water enough annually

from the ocean to cover the earth to a depth of five feet with rain-water, to transport it from one zone to another, and to precipitate it in the right places at suitable times and in due proportions, is one of the grand offices of the atmosphere." This water is evaporated chiefly from the torrid zone. Supposing it all to come thence, to raise as high as the clouds, and to lower down again, all the waters in a lake sixteen feet deep, three thousand miles broad, and twenty-four thousand long, of the annual business of this invisible machinery. Well may we exclaim, What a powerful engine is the atmosphere! And how nicely adjusted must be all its cogs, and wheels, and springs, and compensations, that it never wares out, or fails to do its work at the right time and in the right way! "According to Laidly," adds Maury, "the evaporation at Calcutta is about 15 feet annually; between the Cape of Good Hope and Calcutta it averages in October and November, nearly three-quarters of an inch daily; between 10 and 20 degrees in the Bay of Bengal it was found to exceed an inch daily. The South Seas then should supply the atmosphere with watery vapour, while the northern hemisphere condenses it. We should therefore have more rain in the northern hemisphere. The rivers tell us that we have, for the great water courses of the globe, and half the fresh water in the world, are found on our side of the equator. The rain gauge also tells us the same story. The average fall of rain in the north temperate zone, according to Johnstone, is 36 inches: he gives but 26 inches in the south temperate. The observations of mariners corroborate this conclusion. Rains, fogs, thunder, calms, and storms, all occur much more frequently, and more irregularly on this side, than they do on the other side of the equator.

Let us begin our examination by finding out the ordinary amount of vapour present in the air, and with what gases it is mixed. The composition of the atmosphere, at a mean temperature and pressure, is as follows:—

## By measure. By weight.

|                      |      |       |
|----------------------|------|-------|
| Nitrogen gas .. .    | 77.5 | 75.55 |
| Oxygen gas .. .      | 21.0 | 23.32 |
| Aqueous vapour ..    | 1.42 | 1.03  |
| Carbonic acid gas .. | 0.08 | 0.10  |

Whoever wishes to see that aqueous portion of the atmosphere made apparent to his senses, need only to introduce a glass of very cold water into a warm well-tenanted room—the vapour of its atmosphere is immediately condensed on the glass. It is not as is commonly said, the heat of the air, but its warm aqueous vapour, that strikes, that is condenses upon the glass.

The state in which water exists in the atmosphere seems now pretty well determined. It was formerly supposed, by the majority of philosophers, that it was in a state of chemical combination with the atmospheric gases; but later researches seem to show that it is in a state of

steam. Saussure long since had shown that the amount of steam existing in a given space and temperature is the same, whether the space be free from or filled with air; and then Dalton distinctly proved that the vapour of water mixed with air, or other gas permanent over water, differs in no respect from pure steam, and is subject to the same laws. The aqueous vapour of the air constitutes, in his opinion, a distinct and independent atmosphere, the elastic force of which forms at different temperatures different proportions of the elastic force of the whole. For example, at the temperature of 95 deg. it gives to air 1-50th of its elasticity. According, therefore, to this view, which is confirmed by the experiments of Gay Lussac and others, a volume of air, or gas, at any temperature, saturated with moisture, contains as much steam as would exist, at the same temperature, in a vacuum of the same extent.

The insensible vapour in the air we may then conclude is merely mechanically mixed with the atmospheric gases; there is no chemical combination. It is the diffusion of water in the state of steam, produced by the evaporation from the earth's surface. This evaporation is hardly ever interrupted; it continues very often even when rain is falling, or the ground covered with snow—under the burning sun of the equator, or in the eternal ice of the arctic regions, it still proceeds. It is, indeed, remarkable, as the Rev. L. Jenyns observes ("Meteorology," p. 164), that evaporation still goes on when water is frozen, the same as when it is liquid: even the most intense cold is insufficient of itself to put a stop to it. This circumstance often strikes persons with astonishment who witness it in its effects without being aware of the true cause. They see a fall of snow gradually waste—if light, wholly disappear—or a block of ice sensibly diminish during the continuance of a frost, especially if the wind blows tolerably fresh from some point towards the north, without the least sign of liquefaction on the surface. And they perhaps naturally enough wonder what has become of it. Sometimes also in deeper snows the surface becomes curiously grooved or channelled, by the wind acting unequally upon it, and thus promoting unequally the evaporation. This phenomenon is best observed around the trunks of trees, and near the interstices of palings, or wherever a stream of air acquires an increased force in a particular direction. There is every reason to conclude with Dr. Prout, that the quantity of vapour thus formed from snow and ice is precisely equal to what would be evaporated from water itself, provided water could exist as a fluid before the temperature at which it is congealed.

The amount of water in the air, from an average of seven years' observation at the Greenwich observatory during each month of the year, has been given by Mr. J. H. Belleville, in his "Manual of the Thermometer."

In the following table, column I, gives the

mean weight, in grains, of vapour in a cubic foot of air at 9 o'clock, a.m., and column II. the amount at 3 o'clock, p.m., Column III. gives the mean addition of vapour required for complete saturation of a cubic foot of air at 9 o'clock, and column IV. the amount needed at 3 o'clock.

|            | EXISTING AMOUNT. |        | DEFICIENCY. |        |
|------------|------------------|--------|-------------|--------|
|            | I.               | II.    | III.        | IV.    |
|            | 9 A.M.           | 3 P.M. | 9 A.M.      | 3 P.M. |
| January..  | 2.70             | 2.84   | 0.17        | 0.30   |
| February.. | 2.58             | 2.72   | 0.25        | 0.62   |
| March...   | 2.77             | 2.85   | 0.40        | 1.05   |
| April....  | 3.26             | 3.37   | 0.68        | 1.41   |
| May.....   | 4.02             | 4.06   | 1.10        | 2.04   |
| June.....  | 4.71             | 4.78   | 1.45        | 2.42   |
| July.....  | 5.07             | 5.26   | 1.50        | 2.27   |
| August...  | 5.00             | 5.07   | 1.18        | 2.27   |
| September  | 4.66             | 4.77   | 0.73        | 1.93   |
| October..  | 3.96             | 4.01   | 0.35        | 1.08   |
| November   | 3.27             | 3.42   | 0.22        | 0.55   |
| December.  | 2.78             | 2.89   | 0.17        | 0.37   |

The amount of water which the air contains<sup>d</sup> let us remember, increases with its temperature. The mean relative humidity of the air, Mr. Belleville observes, is greater at 9 a.m. than at 3 p.m.; the mean quantity of vapor in this time actually *increases*, but as the increase is *not* in proportion to the increase of *temperature* in the same interval, the air is relatively drier.

November, December and January are the months when the air is most frequently saturated with vapour. As Spring advances the air becomes warmer, and the point of saturation further removed. A cubic foot of atmospheric air, when saturated with water, at the temperature of 66 degrees, contains only about eight grains of water. Dalton calculated that the medium quantity of vapour held in solution at once in the atmosphere may amount to about one seventieth of its bulk.

That vapor we have seen is mainly supplied by the evaporation of the surface of the ocean; but the land contributes a large proportion: the vegetable and animal worlds do the same. First as to the portion yielded by the land, the amount of water evaporated from its surface has been examined by various experimentalists. Schubler conducted his trials on a small scale, with different earths exposed in trays to the sun and winds (*Journal R. A. S.*, vol. i. p. 177). He found that the difference in the evaporation from the surface of different earths was not so great as might have been anticipated. He determined that when a given surface of calcareous sand lost by evaporation during four hours 146 parts, an equal extent of fine garden-mould lost 143 parts, some black turf soil 128 parts, and two specimens of clay soil each lost 123 parts.

Some years after Schubler's experiments, Mr. Dickenson (*ibid*, vol. v. p. 151) examined the amount of the annual evaporation from the



Chalk soils of Hertfordshire. The following were some of the results he obtained —

|                          | 1842. | 1843. |
|--------------------------|-------|-------|
| Depth of rain in inches. | 26.43 | 26.47 |
| Evaporation.....         | 14.7  | 18.37 |
| Filtration .....         | 11.76 | 8.10  |

In the same years, on the limestone soils of Yorkshire, Mr. C. Charnock obtained the following results (*ibid*, vol. x., p. 517):—

|                          | 1842. | 1843. |
|--------------------------|-------|-------|
| Depth of rain in inches. | 26.11 | 24.9  |
| Evaporation.....         | 21.56 | 26.11 |
| Filtration.....          | 4.55  | 4.28  |

It is noticeable from these trials how much greater is the evaporation from the limestone than from the chalk; and how much less the drainage. The wind produces a far more considerable amount than the mere heat of the sun. The marine-salt makers, who expose sea-water, in very shallow ponds to the action of the atmosphere, are well aware how much faster the Summer breezes evaporate the water than the sun on a still day; every washerwoman is aware of the same fact. Mr. Charnock experimentalized upon this question; and found that—

|                                                                                                  | 1842. | 1843. |
|--------------------------------------------------------------------------------------------------|-------|-------|
| The annual evaporation from }<br>water to both the sun }<br>and the wind was in }<br>inches..... | 33.61 | 34.17 |
| From water exposed to the }<br>wind, but shaded from the }<br>sun .....                          | 22.48 | 22.7. |
| From a drained soil.....                                                                         | 21.56 | 20.11 |
| From a soil saturated with }<br>water.....                                                       | 30.02 | 31.19 |

But it is not only the surface of the earth and its waters from whence the insensible moisture of the atmosphere is derived. Plants contribute copiously, too, to the supply. It is certain that plants of all kinds exhale moisture in large proportions. Mr G. Philips (*Joar. R. A. S.*, vol. vii., p. 306) found that the polyanthus, placed in a pot of earth, between the 23th of February and the 14th of April, 1845, evaporated 2.01 grains of water daily for every square inch of surface of its leaves, the mould 10.8 grains for every inch of surface; he found that a fine day, with sun and wind, always promoted evaporation, while a dull, cold day always retarded or stopped it. The evaporation from the leaves of a potato, under similar circumstances, was much less, being at the rate of only 1.4 grains per day for each square inch of surface. The transpiration of moisture from plants increases progressively from March to August, after which period it declines. It is the most copious from sun-rise till noon, after which hour it lessens. Other plants emit moisture at a much greater rate than the polyanthus or the potato. Hales found that the sunflower transpired, in July and August, 15

grains of water from every square inch of its surface; a cabbage, under favorable circumstances, has been found to emit, daily, water equal to its own weight.

Need we attempt to calculate the enormous amount of aqueous vapor which the vegetable world thus contributes to our atmosphere? the whole covering of our Emerald Isles pouring in an incessant stream of moisture; the vegetation of all lands contributing their portion. The dense steaming forests of the equatorial regions adding perhaps the largest amount in a given space, enormous, though insensible streams, rivalling in their weight of water those of the Amazon and the Mississippi. From the vegetation of the whole world, in every clime, in every soil, and at every altitude, from the level of the sea up to the lines of eternal snow, by day and by night, is this out-pouring going on; no winds prevent its continuance, by no change of temperature is this invisible stream of watery vapor entirely stayed.

But the emission of vapor upon the air by the surface of the earth, its waters, and its vegetation, are not the only sources of the supply of atmospheric moisture. All animals contribute a considerable share. As I have elsewhere had occasion to remark, the evaporation from the surface and from the lungs of animals is very considerable; it varies, however in different species and individuals. Cruikshank calculated it from his experiments to average about 7 pints in a man, during the 24 hours; Lavoisier and Seguin made it amount to only  $3\frac{1}{4}$  pints, the maximum being 5lbs, the minimum  $1\frac{1}{2}$ lbs. They calculated that, in every 18 parts of water thus evaporated, 7 parts were from the lungs, and 11 from the skin. Its amount is increased by drink, but not by solid food. Its minimum amount is immediately after a meal, and in close, foggy weather: it attains its maximum during digestion. It is, as might be expected, the most considerable in warm and breezy weather, in hot climates, and after great exercise. This is indicated by the enormous quantity of liquid consumed by those who labor under such circumstances; the daily 14 pints of beer, the 24 pints of cider allowed to the reapers (*Jour. R. A. S.*, vol. xiv., p. 445); and by the 30 pints of porter swallowed by the London coalwhippers—an amount which is often unequal to the loss they sustain by transpiration. The evaporation from labourers in certain situations, is, in fact, enormous. Dr. Southwood Smith made some observations upon the men employed in filling and emptying the Phoenix Gas Works. These men are thus engaged twice a day. On a foggy day in November, when the temperature of the external air was 39 degrees, the greatest loss of weight by these men in an hour and a quarter, was 2lbs. 15 oz.: and the average of eight men was 2lbs. 1 oz. On a bright day in the same month, when the temperature of the surrounding air was 60 deg., the greatest loss

of weight was 4lbs. 3 oz., the average loss being 3lbs. 6 oz. On a bright, clear day in June, the greatest loss sustained in the hour, by a man who had worked in a very hot place, was 5lbs. 2 oz.; the average of all, 2lbs. 8 oz.

Such are the chief sources of the vast fountains of vapor which replenish the atmosphere with the water that we shall presently trace becoming visible to our senses, in clouds, in dew, and in the rain drop. The atmosphere in which we are enveloped, and in which, and by which we live, is indeed, full of marvels abounding with evidences of design, and the benevolence of its Creator. It is such testimonies that our readers may profitably study, not only in their fields, but by their study fire; and as an able American author, whom I have before quoted, remarks, in one portion of his excellent works "to him who studies the physical relations of the earth, sea and air, the atmosphere is indeed something more than a shoreless ocean, at the bottom of which he creeps along. It is an envelope, or covering, for the dispersion of light and heat over the surface of the earth: it is a sewer into which every breath we exhale, we cast vast quantities of dead animal matter: it is a laboratory for purification, in which that matter is recomposed, and wrought again into wholesome and healthful shapes; it is a machine for drawing up all the rivers from the sea, and conveying the waters from their fountains in the ocean to their sources in the mountains: it is an inexhaustible magazine, marvellously adapted for many benign and beneficent purposes. Upon the proper working of this machine depends the well-being of every plant and animal that inhabits the earth. Its movements, therefore, cannot be left to chance. They are guided by the laws that make all parts, functions, and movements of the machinery as obedient to order, and as harmonious as the planets in their orbits.—*Farmers' Magazine.*

### In Breeding Horses, do the Stock Take Most After the Sire or Dam?

So important is it that agriculturists should have definite ideas on this interesting subject, that we this week place at the head of our column, a query addressed to us by a correspondent from Kiaross. Judging from prevailing practice, we can scarcely avoid the conclusion, that farmers generally deny that the mare has much or any influence on the development and growth of the progeny. How else can we explain the notorious fact that an immense proportion of the breeding mares throughout the country are selected not on account of their superior appearance and qualities, but because age, accident, or hereditary effects have rendered them less valuable for work. How opposite is this to the more rational practice of those keen horsemen the Arabs, Money fails to purchase their best mares

According to the view first distinctly set forth several years ago by Mr. Orton of Sunderland, and concurred in by most good judges, the progeny appears especially to resemble the dam in the head, carcass, internal organs, and temper, whilst the influence of the sire is more especially noticeable in the colour, and the form and style of the limbs. The powers of endurance depending upon the deep chest, arched ribs, and well developed lungs, are the valuable qualities of many a priceless mare, and descend with great certainty to her offspring by various horses. On the other hand, the colts got by particular stallions usually exhibit great similarity in color, in the style of their action, and also in the defects of their limbs. If the horse has been subject to splints, spavins, or such other bony deposits, a large proportion of the colts will exhibit a similar tendency. This view, must not, however, be carried too far. It must not thence be presumed that the sire exercises no influence upon the development of the internal organs or temper, or that a mare's weak or mis-shapen limbs will not reappear in her progeny. It only justifies us in saying, that whilst the male and female appear to impress their characters tolerably equally upon the offspring, the characters, peculiarities, and even the diseases of the internal organs, are in the majority of cases those of the female parent, whilst the skin and organs of locomotion usually indicate the preponderating influence of the sire. From this law, however, two important practical deductions may be safely drawn—1st, never to breed from mares with narrow contracted chests, or weak loins, or delicate constitution: and 2d, to eschew as decidedly entire horses with weak, badly shaped, or diseased limbs.

But other influences are also at work affecting the share which the two parents have on the offspring. The parent in the highest state of health and vigor always imparts more than its own share of character. Thus the progeny will more resemble the active vigorous young stallion than the old worn-out mare to which they may be put. Hence the importance of maintaining in a healthy and natural state all animals intended for breeding purposes. It is further most interesting, that of the two parents, the best bred or highest descended is most strikingly reproduced in the offspring; and this is so notorious, and applies so constantly to all the higher animals, that breeders should avoid all half-bred sires, and use only such as have, in addition to good shapes, a fair unblemished pedigree. The character and qualities of such parents being transmitted through many generations, and more permanently and indelibly fixed, and are greatly more likely to be impressed upon the progeny. Thus a well-bred Short-Horn bull will produce from a lot of ordinary cows, calves resembling their sire and each other in color, heavy flesh, superior quality, and all other good points. The strong capability of such well-bred animals to



reproduce their good qualities may be judged off by the frequency and persistence in their stock of certain slight markings. How frequently, for example, do well bred bulls, with a strong infusion of Duchess blood, get their calves out of cows of all sorts and colors distinctively marked with the white spot on the loin, and frequently also on the tail!

To obtain a tolerably certain result in breeding, parents must be selected possessing tolerably similar characters. Uncertainty and disappointment are sure to follow from the attempt to breed from unlike or very dissimilar parents. Thus failure generally follows the union of the draught mare and thorough-bred horse, or *vice versa*. The dissimilar characters of such unlike animals cannot be properly blended in the offspring, and nondescript horses with big heads, deficient action, weak limbs, and bad feet, are the usual results. All this, we thought, was already sufficiently well known to every farmer and breeder, and yet we this week met an intelligent gentleman returned home from the Cape, and purchasing to take out with him a number of cart fillies to be put to an Arab, and from this violent and unsuitable union a good stamp of riding horse is expected. Time and money would be great better spent on strong, active, half-bred mares, which should, in our opinion, be put, not to an Arab, but a strong stout, well-actioned, short-legged English thorough-bred.—*North British Agriculturist*.

### Judging Stock, &c., at the Provincial Exhibition.

EDITOR OF THE AGRICULTURIST—SIR,—I take the liberty of sending a line to you, as I see some complaints in last number of the *Agriculturist* in reference to having too many Judges on Sheep. You say you want communications on subjects touching the different merits of the arrangements of the show. Formerly one set of Judges had to act on two or three classes of sheep, and I have frequently seen sheep shown in two different classes. When thrown out of the Leicester class, they would turn right into the Longwool.

I think by having sets of judges for every class, making them all come out at the same time, is the best preventive against such doings. The principle is a good one, and should be carried out every year, however much it may displease a few exhibitors. Surely if a man has got ambition to raise five or six distinct breeds of stock, he can or will try to employ men to look after his own interest when it would be only for one or two days.

I have been an exhibitor of late and shall be one this year, and think it behoves every one to try and have the show conducted in a

proper manner. I am sure the managers will not encourage anything else, as it is to the verdict of those shows that we look for satisfaction. Yours respectfully,

AN EXHIBITER.

Halton, Sept. 1862.

## Agricultural Intelligence.

### Agricultural Exhibitions this Autumn.

#### PROVINCIAL AND STATE.

Upper Canada, at Toronto, September 22nd—26th.

New York State, at Rochester, September 30 to October 3.

Illinois State, at Peoria, September 30 to Oct. 4.

#### COUNTIES.

Stormont, at Cornwall, Oct. 8th and 9th.

North Simcoe, at Barrie, Oct. 1st.

Brockville, at Brockville, 18th and 19th.

South Simcoe, at Bradford, Oct. 2nd.

Durham West, at Bowmanville, Oct. 9 to 10.

North Lanark, at Almonte, Sept. 16th.

Russell, at Osborne, Sept. 30.

Peel, at Brampton, Sept. 17th and 18th.

North Leeds & Grenville, at Frankville, Oct. 1

North Ontario, at Prince Albert, Oct. 7th.

East York, at Markham Village, Oct. 9th.

South Wellington, at Guelph, Oct. 10.

North Wellington, at Fergus, Oct. 14.

South Grenville, at Prescott, Oct. 8th and 9th

West Northumberland, at Grafton, Oct.\*15.

Addington, at Newburgh, Oct. 25.

Dundas, at Morrisburgh, Oct. 2, 3.

Niagara, at Niagara, Oct. 9.

Lambton, at Sarnia, October 8th.

South Waterloo, at Ayr, October 1st.

Prescott, at L'Original, September 26th.

Kent, at Chatham, October 9th.

West Elgin, at Wallacetown, October 14.

Norfolk, at Simcoe, October 14.

South Hastings, at Belleville, October 7.

#### TOWNSHIPS.

Puslinch, at Aberfole, Oct. 8th.

Hamilton Township, at Baltimore, Oct. 9.

Barton and Glanford, at Ryckman's Corners, Oct. 2nd.

Camden, at Centreville, Oct. 18.

Vaughan, at Burwick, Oct. 30.

Norwich, at Otterville, Oct. 11,

Portland, at Harrowsmith, Oct. 17th.

Erin, at Hillsburg, October 16.

Yarmouth, at Clark's Hotel, St. Thomas, October 14.

Edwardsburgh, at Spencerville, October, 14.  
Asphodel, Belmont and Dummer, at Norwood,  
October 14.

Whitchurch, at Anrora, October 1.

Southwold and Dunwich, at Fingal, Sept. 16.

Hay, (County Huron), at Rogerville, Oct. 8.

Winchester, at West Winchester, October 8.

### Great Annual Sale of Shropshire Sheep.

As the Shropshire breed of sheep is gaining great popularity in Britain, and as some importations have, of late, been made by a few of our enterprising Canadian Farmers, the following account of the public sale, abridged from a late number of the *Shrewsbury Chronicle*, may prove interesting to many of our readers:—

On Monday week an extraordinary exhibition of stock was exposed for sale by Mr. W. G. Preece, at The Flask, in this town. The stock consisted of 250 magnificent rams of all ages; of these no less than 229 were absolutely sold or let; and on Tuesday 750 breeding ewes of the best blood in the county. The sale commenced with Messrs. Crane's lot, which were knocked down at sums varying from 9 to 46 guineas. These were followed by two belonging to Mr. W. G. Pearce; Robin Rough sold for 33 guineas, and Channock Ranger for 21 guineas. The Rev. C. P. Peter's rams ranged from 9 to 21 guineas; Mr. H. Smith's, of Sutton Maddock, 7 to 29 guineas; Mr. J. Evan's, of Uffington, 6 to 21 guineas; Mr. Stainer's, Wroxeter, an average of 12 guineas; Mr. Maddox's, Harley, averaged 14 guineas; and Mr. Claridge's, Pitchford, averaged 15 guineas. Mr. Joseph Meure's lot were let and sold at prices ranging from 6 to 13 gs; Lord Wenlock's sold at 7 to 21 guineas. and Mr. Sheldon's Brailleshouse, 7 to 27 gs. Mr. Horton's five sheep were let at the following prices:—One to Mr. Hatton at 70 gs.; one to Mr. Davies, Meer Old Hall, 60 gs.; one to Mr. Williams, 28 guineas; one to Mr. Henry Nicholls, 19 guineas; and the last to Mr. G. Cnreton, at 20 guineas. Mr. P. W. Bowen's lot sold on an average at 18 guineas. Mr. Mansell's, 16 guineas; Mr. Matthew's, 17 guineas; Mr. R. Lee's, 10 guineas; Mr. Lander's, 9 guineas; Mr. Thornton's, 8 guineas; and Mr. Stubbs, Weston, 20 guineas. Among Mr. Adney's was the grand five-year-old ram, Lord Harley, sire of Havelock, the winner of the first prize at Battersea. This fine old sheep was purchased by Mr. Horley of the Fosse, the owner of Havelock, for 39 guineas. On Tuesday, the sale of the ewes took place, and the competition was carried on with great spirit throughout. Messrs. Crane's ewes ranged from 3 to 5 guineas each; Mr. Evan's, Uffington, 2½ to 4 guineas; Lord

Wenlock's, 2½ to 5 guineas; Mr. Minor's, £3; Mr. P. W. Bowen's, 3 guineas; Mr. T. Mansell's, 60s. to 75s.; Mr. A. Mansell's, 2½ guineas; Mr. W. G. Preece's, 70s.; Mr. Thornton's, 60s.; Mr. Brooke's, Rowton, 55s.; Mr. Belliss's, Burlington, 2½ to 3 guineas; Mr. R. Lee's, 50s.; Mr. Pembrey's, 60s.; Mr. Plimley's, 60s.; Mr. Archerley's, Moortown, 63s.; Mr. Pitt's, Posenhall, 50s.; Mr. Preece's, Cressage, 63s.; Lord Berwick's and the Hon. N. Hill's from 2 guineas upwards; Messrs. Homer's, Sankey's, Harris's, &c., &c., from 40s. to 50s. each.

### Malignant Disease among Sheep in England.

In a recent number of the *London Times*, we find the following startling article, from which it would appear that *small-pox* has suddenly broken out among a large flock in the South of England, in a very malignant form. The facts are exceedingly interesting:—

It is impossible for words to describe fully the excitement which has for the last few days prevailed in Wiltshire and the upper parts of Hampshire, in the agricultural classes, in consequence of the breaking out of a malignant disease in one of the largest breeding flocks in the west of England—in a flock, too, that has for the last 50 years been regarded as one of the most healthy flocks upon the Beckinham Downs. For a few days there was some secrecy in the matter; but so completely impregnated is the whole flock that for the sake of flock masters generally it is desirable that a notice of the attack, and the means which are being taken to subdue it, should be forthwith promulgated. The facts are briefly these:—It is now about a month ago that Mr. Joseph Parry, of Allington, was riding alongside one of his folds, containing about 300 two-year-old ewes, when he observed one of the ewes lying by the hurdles. The animal looked in a pitiable condition, soon breathed its last, and was put out of the way, and for the time nothing more was thought of the occurrence. But, in a day or two after, other sheep in the same flock showed symptoms of illness, exhibiting great internal suffering, loss of appetite, heaviness and indisposition to move, and general prostration. The two-year-old ewes had, up to this time, been kept with their lambs; but thinking it better to separate them, the latter were now removed and put with other lambs upon the farm, the former being turned among the general breeding flock, making altogether 1,000 ewes and 700 lambs. The nature of the attack upon the two-year-old ewes surpassed all comprehension. That it was eminently contagious was certain. In the course of a fortnight, the same symptoms began to show themselves among the older ewes and among the lambs, and for days in succession as many as 20 or 30 of the



ewes died in a most loathsome state of disease, their bodies covered with pustules and a vicious matter running from the nose and from the eyes, rendering the sheep completely blind, and emitting the most foul stench that can be conceived. All local remedies are entirely unavailing. The malady was a mystery, and it became necessary that the best possible advice should be had, and that, too, without delay. Mr. Joseph Parry went to London, last Monday week, to consult Prof. Simonds, the well known lecturer at the Royal Veterinary College. After hearing Mr. Parry's explanation of the symptoms. Professor Simonds came immediately to the conclusion that the disease from which the sheep were suffering was small-pox; but as small pox has never been known to make its appearance except through infection—as, wherever it has appeared, its origin and propagation have always been traceable—its introduction into Mr. Parry's flock was perfectly unaccountable. Every suggestion which the Professor could offer was at once met by Mr. Parry. There had been no change on the female side of the flock for at least half a century. New male blood was only introduced once in two years; and it was now two years since Mr. Parry had purchased or hired rams from another flock. Neither could it have been imported by the shearers, as all the flocks which the same shearers had shorn this year, both before and after Mr. Parry's, were known, and in neither was there the slightest symptoms of disease. In short, there was no traceable means of accounting for the visitation. A "chill" could not possibly produce it, as a common cause of illness would not produce a special disease of this description. Its spontaneous appearance, therefore, is a thing unheard of. Moreover, it is a disease unknown among English flocks; the only occasion of its appearance here having been 1847, when some Merino sheep that had just been imported were sold with the small-pox upon them at Smithfield market. This was the first known appearance of the disease among sheep in England; and although it was then unfortunately communicated to two flocks belonging to Mr. Statham, a farmer at Datchett, near Windsor, and Mr. Weale, of Pinger, and for a time found its way into Norfolk and Hampshire, it was ultimately eradicated, and from that time to the present there has been no known instance of small-pox in this country. To account for it in the present case, therefore, seemed impossible, inasmuch as Mr. Parry's had always been a notoriously healthy flock—well tended, carefully fed, and with all the advantages of fine down air. Still, from the symptom, Professor Simonds had no doubt about the fact, and his visit to Allington on Friday last fully confirmed his previous persuasion. On examining the sheep he found them suffering in almost every stage of the disease, some in which the pox had first shown itself exhibited a staggering gait, with slight fever, and swelled eyelids; in others, when it had become more fully de-

veloped, red spots (easily discernable upon the bare parts on the inner surface of the legs) were found thickly studded over the body, while in those where the complaint had still further advanced, pustules (in form like the heads of linary small-pox) and malignant ulcers, emitting a thin stinking matter, were the distinguished features of the malady. A more loathsome sight than the sheep exhibit in this advanced stage can hardly be imagined. The contagious nature of the disease is truly astonishing. An instance is related (when it was introduced into England by the Spaniards in 1847) of its having broken out in a flock penned some distance off, but in the same field, while feeding on rape, clearly showing that infection was carried in the air from one flock to the other. Considerable danger has in the same way arisen on the continent (where the disease is well known) from the driving of a healthy flock on the same road or on the same down which had previously been travelled over by diseased sheep, or by the immediate transit of a sheep dog or a shepherd from one fold to another. But while it is so highly infectious to sheep, it is by no means so to other animals or to human beings. Cases are recorded in which children of all ages have been inoculated over and over again without any specific disease resulting; and the like experiment upon the cow, and even the goat, have been equally unavailing. Upon examining the flock on Saturday and Monday and again on Tuesday, Professor Simonds found that a great number of sheep had already passed through the most trying part of the malady while some (as many as 170) were declared by him to be perfectly convalescent. This being the case, it impossible to say how long the disease has actually impregnated the flock; but to reduce its continuance to a certainty, and as the most effectual means of preserving those that have not already been attacked, Prof. Simonds suggested that the whole of the sheep should at once be inoculated; and, having placed the case entirely in the hands of the Professor, Mr. Parry assented to this proposition, and the whole flock of 1,700 sheep and lambs (exclusive of those which have died and those which have recovered) are accordingly at this moment either in an incipient or a malignant state of small-pox.

Adding misfortune to misfortune, the old shepherd who had tended the flock for the last thirty years dropped down dead among his sheep last Thursday evening. Proud of his flock, which had borne a high character, and reflected credit upon his management, the poor man seemed to feel the visitation most acutely; and there is no doubt that the anxiety under which he had been labouring for the previous month, acting upon a diseased heart, tended to bring about his melancholy end. He was endeavouring to catch one of the sheep on Thursday evening, when he fell with the animal under him, and almost instantly expired.

## Horticultural.

### Toronto Horticultural Society.

#### THE HORTICULTURAL EXHIBITION.

The last exhibition for this year of the Horticultural Society in their Gardens, Gerrard street. The weather was fine, though, before the sun went down, exceedingly warm. The attendance, considering the attractions, and the large number who have visited previous shows, was small. In the evening, when the temperature was pleasant, and the lamps were lit, the largest numbers were there, and to judge by the merry peals of laughter which ever and anon rang through the darkness, the folks enjoyed themselves amazingly. The exhibition was not a large one, but in quality, the fruits, flowers, plants and vegetables shown have never been excelled in Toronto, at this season of the year. Perhaps the grapes attracted as much attention as anything else. The people hung around them with their eyes, as they were not permitted to do so with their teeth. The most luscious and beautiful specimens came from the vineries of Mr. Eccles and Mr. Gzowski. The exhibition of cut flowers was very fine; the colours good, and the specimen placed on view numerous. The collection of bouquets was perhaps the best, though certainly not the largest, offered at any exhibition of the Society. There has been considerable improvement during the last three years in the making of bouquets. Our florists are beginning to understand that there is something more necessary to this than the mere tying up of a bunch of flowers. They must be carefully assorted, the colours contrasted or blended one with the other, "violent" hues must be subordinated, and the best flowers made prominent, without at the same time placing the rest out of sight. These requirements have to a great extent been met, but there is room for improvement. One of the most tastily "set up" bouquets was exhibited by Mr. George Tattle. It consisted merely of wild flowers gathered from Canadian woods and fields, but looked very beautiful. Fall flowers, such as astorias, phloxes, verbenas, asters, dahlias, &c., were plentiful, and well grown—the phloxes especially being very fine. Stove and green house plants amongst which were some new varieties, were exhibited by Hon. I. C. Morrison and Hon. S. B. Harrison. Apples, pears and plums, celery, cauliflowers, parsnips and onions occupied considerable space, and formed a good representation of Canadian vegetables. The judges found their duties very onerous, and had more than ordinary difficulty in deciding between the merits of many rival claimants at their hands. Having discharged their duties, however, they with the Committee adjourned to lunch. When justice

had been done to the eatables, the chairman, Hon. G. W. Allen, in proposing the health of the judges, remarked that in order to avoid jealousy among exhibitors, the judges were now brought from a distance, so that no charge of favouritism or of partiality could be preferred against them. Mr. Miller of Guelph, responded. The healths of the active and attentive secretary of the Society, Mr. J. C. Small; and of its liberal President, Mr. Allen, was also drank. Mr. Humphries kindly entertained the company with a few good songs, interspersed between the speeches. We nearly forgot to mention that the band of the 30th was in the Gardens all day. During the evening they played a variety of popular pieces, which were greatly enjoyed by the company.—*Globe*.

### Dwarf Apple Trees, once more.

EDITOR OF THE AGRICULTURIST,—Friend Werden's last article in the *Agriculturist* about Dwarf Apple Trees, would seem to demand a reply more lengthy and pointed than I have at present either time or inclination to devote to it. With your permission, however, I will again venture to make a few remarks, not in defence of those Nurserymen in Rochester or Toronto, who have "humbugged" Mr. Werden, but in defence of those charming objects of the fruit garden, viz. Apple Trees upon the Paradise stock.

To state in the outset that such trees are more hardy, will generally bear much earlier, and grow much slower than when grafted upon the common apple stock, would be only to repeat what every Horticultural and Agricultural Journal, both in Europe and America, have stated again and again. If Mr. Werden denies this, why, we must agree to differ. After all his cry of humbug, however, he says:

"Now I do not say that there is not such a thing as a Dwarf Apple Tree as described, but, unfortunately for me, I have not got them." Surely Mr. Editor, the trees are not to blame, and Dwarf Apple Trees are such, whether Mr. Werden has them or not; and his crying humbug, cannot alter the character of the trees in the least. If any nurserymen have cheated Mr. Werden, let the persons be named and blamed, but let not genuine Dwarf Apple Trees be called a humbug. Mr. Werden says, "I hope Mr. Arnold will take pity on us and send me 25 genuine Dwarf Apple Trees." No, friend Werden, Mr. Arnold will do no such thing, he has too much feeling for his Dwarf Apple Trees to submit them to your, "continual warfare of pruning, cutting back, pinching and nipping." The fact is, Sir, that apple trees dwarfed, nineteen varieties out of twenty, require scarcely any nipping, pinching or pruning; but like the rebels in the South, all they ask is to be let alone. Why Mr. Editor, if I should send Mr. Werden



25 trees would he not again cry out humbug, and say that I had written all this for the purpose of selling my trees; most assuredly he would, and on my refusing to send the trees, perhaps Mr. Werden will say that I am afraid to put the trees to the test; but in order to test the thing fairly, let Mr. Werden put 25 Dwarf Pears of his own selection, and I will put 25 Dwarf Apples of my selection in the hands of the Directors of the the Toronto Horticultural grounds, or if he prefer it, in the hands of Judge Logie, the President of the U.C. Fruit Growers' Association. And if my Dwarf Apples do not yield more fruit for the first two, or if he prefers it twenty years; than Mr. Werden's Dwarf Pears, then I will pay for the Pears. And if the apples do yield more than the pears, then shall Mr. Werden foot the bill. But Sir, to come to the point, and test the question fairly as to whether the apple will grow slow and bear earlier upon the Pardice stock than upon the common apple stock: Let us walk out amongst them. Now, Sir, here we are, and here stands a Dwarf (Red Astrachan) planted in 1853, it measures six feet in diameter, and stands six feet high, it has borne 7 full crops in 9 years, and every Spring it is one mass of blossoms, and the sight of the blossoms alone well repays me for the ground that it occupies, and for the trouble of cultivating it. And here stands (a few rods from the Dwarf) a Standard of the same variety, planted at the same time, and both have received the same cultivation, viz., ordinary cultivation, or such as other trees or bushes generally get in the gardens of our thrifty farmers or mechanics. This tree is at least three times as large as the other, every way, and has borne me just three apples in nine years.

I could give at least a dozen other instances with the same results as to growth; but, as Mr. Werden, says he "would not mind going a hundred miles to see a bush of the Northern Spy or St. Lawrence in full bearing at the size of two feet." I will instance the St. Lawrence and let that suffice. And here in the nursery, rows of 3 year old plants, in the first 8 trees, there are four bearing fruit, thus: five, four, three, and one severally; and not one of these bearing trees is more than 2½ feet high. But my two standard specimens, St. Lawrence, 9 years planted, and at least 14 years old, fine, large, healthy trees, have never yet yielded me a dozen apples. And now, Mr. Editor, one word more and I have done. As Mr. Werden has referred us to his prize essay on fruit culture, let us turn to it on page 154 of the Transactions of the Board of Agriculture for the year 1859, and let Mr. Werden's "fellow farmers" read it—here it is, "As for dwarf apple trees, I feel so well satisfied that they will give good satisfaction, that I recommend every man that has ground only for a garden, to fill it up with these trees, \* \* \* \* and, my word for it, it will be

more profitable than 50 acres to agricultural purposes." What, a garden of dwarf apple trees more profitable than 50 acres to agricultural purposes! Tell it not in Gath, publish it not in your city, Mr. Editor, lest some of those wicked politicians should get hold of it, and should attempt to prove from this prize essay that our noble, Provincial Agricultural Association was a humbug; that the funds of the society were squandered upon essays on fruit culture, which were calculated to lead the people astray; if the advice respecting dwarf apple trees was followed. Surely, sir, if the term humbug will apply to any one in Canada who has written on the subject of dwarf apple trees, he who wrote the prize essay on fruit culture for 1858 is the man. That they afford a great amount of pleasure, and some profit, but few that have tried them will in my opinion deny. But the real profit in dollars and cents is another matter, and I would very much like to see the portrait of the man who had become rich from the profits arising from the sale of fruit that was grown either upon dwarf apple or dwarf pear trees.

Yours, &c.,

CHARLES ARNOLD.

PARIS, Sept. 13, 1862.

### Interesting to Fruit Growers.

Any person travelling through the country will observe a general decay of fruit trees. Old orchards in particular, are in many locations an entire failure. What is to be done? Are we to be deprived of fruit, or is there some way to recuperate and prevent further decay? So far as the winters have an influence, we probably need not hope for any change, unless their severity be abated. Extreme warm weather, followed immediately by extreme cold has been the cause, I think, of the general decline of fruit trees. Then the borers and mice have made strange havoc among young trees. I set a row of trees, some third of a mile, near the wall, some five years since. Now there are a very few remaining, and several of those were saved by inserting scions across the wounds inflicted by mice—thereby carrying the sap from top to root. I have recently examined an invention called a "Tree Protector," by Homer B. Record of Turner, consisting of a shield and bonnet. The shield prevents the mice, borers and other insects from access to the trunk of the tree, while the bonnet prevents them from ascending into the branches. The material used is wire cloth, light canvass or what may be equivalent. The cloth is cut so as to go about one third around the tree and to extend upward about one foot. It is slightly enlarged at the bottom so as to conform

to the tree. The top of the shield is provided with an elastic band, somewhat larger than the part of the shield to which it is attached and expands with the growth of the tree. The bonnet is composed of the same material, in the form of a cane and goes around the tree above the shield, with which it may be connected by a small wire, or it may be detached. This too is supplied with an elastic band, so as to expand with the growth of the tree. The bands pass around the tree and fasten with a hook or button. The underside of the bonnet is smeared with tar, then a quantity of cotton or its equivalent applied, which adheres closely to the bonnet. Thus it will be seen that all insects that attempt to ascend the trunk of the tree will become entangled in the bonnet and there die together with their larvæ. The expense for small trees will be from ten to fifteen cents, I think.

Fruit growers should examine this apparatus and satisfy themselves of its utility. I see no reason why it should not produce desired result.  
—*Maine Farmer*.

T. C.

### Decayed Orchards.

It is a well known fact that fruit trees of various descriptions in most parts of Canada have suffered severely from the inclemency of the weather. Many orchards—some of them not old—are in consequence in a state of rapid decay. Indeed from the depredations of insects and other causes, fruit-growing in this Province seemed fast approaching an end. New trees, however, have of late produced occasionally heavy crops, and the produce of most kinds of fruit the present season is abundant. We take the following from a recent number of the *Maine Farmer*; it has reference to the Sandy River valley in that State:—

The orchards throughout the valley seemed to have suffered greatly by the severity of the winter, the trees in most instances presenting the appearance of having been scorched by fire. It is a fact clearly demonstrated by observation—although it is not easily accounted for—that apple trees situated upon elevated localities are found to be more thrifty, and withstand our winters better than those in valleys and low places. With the sad sight which orchards here present—if taken as an average of the condition of those throughout the State—it will not be long ere we shall cease to be an apple producing region, unless something is done. The proper remedy is to be found in commencing anew, and starting young orchards again. We were therefore gratified to see numerous young orchards, some just coming into bearing; and also a num-

ber of nurseries of apple and other fruit trees. It should be borne in mind that orchards need a rotation as much as other crops, and it will be far better to begin a new orchard on a new piece of ground, than to patch up and doctor the old one.

### Fruit Prospects and Birds.

In our last issue we drew the attention of fruit growers to the fact that an extensive show of blossoms is no certain criterion of a plentiful crop of fruit, but very generally the reverse.

Birds are too indiscriminately accused of destroying the fruit buds. They do no such thing. The fact is, when they are supposed to be so engaged, they are actively employed dislodging and devouring insects which have already taken possession of the buds, being there hatched from the eggs deposited by the adult females; and if left unmolested by these useful creatures would not only devour the buds, but continue the multiplication of their species until in time they would eat up every green thing. The infinite wisdom of the Great Creator is in all things seen to be perfect; and in none of his works is this more beautifully displayed than in the ordering of that balance which exists between the animal and vegetable kingdoms, and which if left alone, would work harmoniously for the benefit of man.

The great majority of butterflies, moths, and beetles, in their caterpillar or grub state, feed on vegetables, and it is only when in that state they become our enemies; and their power of propagation is so great as to have no parallel in the whole range of animated nature. Many of them are so minute as to be almost invisible to the naked eye, yet the mischief they occasion is beyond all human calculation, and their habits are so curious and obscure as to be only understood by the scientific entomologist. The cultivator of the land, whose interest is so much at stake in respect to the economy of these, the almost lowest grade in animal life, treats the study of entomology as a chimera and delusion; and so long as he shuts his eyes to the truths of science, so long will he suffer in his basket and in his store.

Certain classes of insects are made to feed upon vegetable food alone; so also have certain classes of birds to be maintained. Hence birds are classed as insectivorous, granivorous, and carnivorous. To understand their classification so as to be able to understand one of these classes from the other, should be the study of both the gardener and the farmer, if they wish for the preservation of their crops; but instead of inquiring into these distinctions, which should be considered as first principles for their guidance, they have through ignorance, maintained a cruel, unnecessary, and mistaken war of extermination alike against their feathered friends and foes.



It is at this season of the year that the great utility of birds may be most easily determined; and on this point a very slight degree of observation must lead conviction to the mind of any rational being. Insects are making sad havoc in our orchards and gardens at the present moment, and to them, in addition to the effects of superabundant blossoms, noticed in our last, is to be attributed the damage doing at this time, for we have not to complain of late spring frosts this season. Our contemporaries are one and all giving very dismal accounts of the fruit prospects in every part of the kingdom. The *Times* deemed it necessary to join in the universal cry in favour of the birds, and even *Punch* has come out in his own peculiar manner with a well timed and forcible broadside.

Birds when encouraged not only keep in check our insect enemies, but they greatly reduce the number of our noxious field and garden weeds by feeding upon the seeds after the insect season has passed.

The following birds are insectivoreous—that is, feeding insects alone, and abstaining from fruits and seeds:—The golden-crested wren (*Regulus iscertatus*), wood[wren (*Sylvia sibilatrix*), the willow wren or hay bird (*S. fitis*), the chiff-chaff (*S. loquax*), the nightingale (*S. Luscinia*), the whin-chat (*Saxicola rubetra*), the stone-chat (*S. rubicola*), the wheat-ear (*S. Cenanthe*), the yellow wag-tail (*Motacillaflava*), the tree-pipet or titlark (*anthus arboreus*), the meadow-pipet (*A. pratensis*), the cuckoo, fly-catcher, the flusker or lesser butcher-bird, the night jar, the sedge-bird, the wryneck, the creeper, the bottle-tit, and to these several others might be added.

The following are insect-eaters, but also eat fruit and seeds:—Hedge sparrow, common wren, red-breast, red-stark, tom-tit, cole-tit, marsh-tit, greater-tit. The number of seeds of weeds that these devour are immense.

The following are fruit-eaters, and also feed on insects:—Black cap, garden warbler, white throat, babillard, missel-thrush, song-thrush, blackbird, and starling.

The following are grain-eaters, some of which, like the house-sparrow, eat insects largely:—Gold-finch yellow-hammer, reed-bunting, corn-bunting, skylark, woodlark, linnet, chaffinch, bull-finch, mountain-finch, house-sparrow, and tree-sparrow.—*Scottish Farmer*.

### The Birch—Its Varieties and Uses.

A correspondent of the *Cultivator* thus writes of the birch: "There are seven species described by the botanists of New England.

"The White birch, sometimes called the gray birch, is a well known tree, and cannot be mistaken for any other tree of the celebrated birch family. It is about a third tree in rank, growing from 20 to 30 feet in height, and sometimes even higher. It has been denominated the com-

panion of the pitch pine, which together usually indicates a light soil. Coleridge calls it the "lady of the woods." It grows rapidly in all soils. It makes good stove wood. One man said of it, "white birch is the most valuable fuel I have, for I can make a good fire of it, and have all the wood left." In good land a crop of birch wood may be taken off once in ten years. It ripens seed in September and October. The bark was formerly used by fishermen along our brooks for a torch-light. The seed should be sown in the fall if it all, and covered lightly.

The paper or Canoe birch is indigenous to deep soils as well as American, and is natural to river banks and intervals. It is a beautiful and most attractive tree. The smooth white bark of the trunk may be separated into delicate horizontal layers, which may be written on by pencil or pen and ink. It grows 40 to 70 feet in height, and varies from one foot to three feet in diameter. The bark was used in olden times in New England, as by the Indians, for making canoes. Michaux enumerates a great many uses to which it has been put in Canada and Maine. The wood takes a fine polish, and is therefore used for hat blocks and cabinet work, and for making shoe-pegs. The bark was formerly used beneath shingles, as I have seen in stripping roofs many years ago. It is almost imperishable.

The Black, Sweet, or Cherry birch is easily distinguished from either of the preceding species, from the dark color of its bark, which gives it the most common name of Black birch. The resemblance of its bark and leaves to the cherry has led some to call it the Cherry birch, and the pleasant sweet taste of the inner bark has led others to call it the Sweet birch. It grows from 30 to 70 feet high, and is from one foot to two feet, and more, in diameter. It is common in deep soils, and flourishes best in mountainous regions. The wood is easily wrought, and is used in arts. It is a delicate rose color, which deepens from exposure. It is used by some for ox-yokes. It makes good fuel; and its bark is used in coloring woollen drab, resembling or bordering on a wine color.

Yellow birch is a lofty tree, growing from 40 to 80 feet in height. It is common in moist woods and swamps. The wood is used for various purposes, especially in chair work, such as posts and bars. It is a valuable fuel.

The Red birch, in aspect, differs from the others. It is found bending over streams, with its roots in the water. It grows with the red maple and the swamp oak. The bark lacks the tenacity of the White and the Canoe birch. On old trees the bark is a dark grey, and very rough. Within, it is of ocre-red. The wood is white and hard. For fuel it is nearly equal to hickory. It is of rapid growth. Yokes are made of it; they are likely to crack unless seasoned in log under cover or in water. It is easily propagated

along streams, and serves as a protector of banks liable to wash from the water coursing therein, thus adding beauty to the stream, while growing valuable timber and wood.

The Dwarf or Tiny birch is from one to three feet in height, and is common among the Alpine heights of Maine and New Hampshire. It is not common away from mountainous regions in New England.

The Low birch, or as some call it the Dwarf birch; the latter being called by such, the Tiny birch—grows in mountainous districts, to the height of from two to six feet.

Here I have attempted to sketch the natural history of the Birch Family, with which I, with most New-England-born boys, have been very familiarly acquainted, even from earliest recollections.<sup>71</sup>

### Qualities of Fine Vegetables.

The garden is the most important appendage to many of the substantial comforts, and some of the most refined luxuries of human sustenance. Its cultivation furnishes a source of health, pleasure and economy, which may be enjoyed by every industrious owner of a few rods of ground, who can devote a little time between his hours of business or labor to this delightful employment. If his occupation and extent of his enclosure will allow him to indulge his taste for fruits and flowers, he might take much pleasure and derive great profit from the management of the vegetable garden alone.

For the purpose of selecting an assortment of the purest vegetables, best suited to the use for which they are grown, we have fixed upon certain qualities which we seek amongst the different kinds.

In the blood beet we always look for a deep color, smooth, handsome form, small top and sweet, tender flesh. In the orange carrot, small top, smooth root, and deep orange colour. In the cabbage short stump, large, compact head, with but few leaves. In the cucumber, straight, handsome form, and dark green color. In the lettuce, large close head, pleasant flavor, with the quality of standing the heat, without soon running to seed. In sweet corn, long ears, very shrivelled grains over the end of the cob. In the cantelope melon, rough skin, thick, firm flesh, and high flavor. In the water melon, thin rind, abundant and well-flavored juice, and bright red core. In the onion, thick round shape, small neck, deep color, mild flavor, and good keeping quality. In the parsnip, small top, long, smooth root, rich flavor. In the pea, low growth, full pods, large and tender peas, rich flavor. In the scarlet radish, deep color, small top, clear root, and quick, free growth. In the squash, medium size, dry, fine-grained, deep-colored flesh. In turnips, handsome form, small tops and tap root, sweet crisp flesh.

Those who have never seen better sorts than they possess, suppose they are of the first quality, when they may be very inferior, or almost worthless, when compared with the finest varieties.

### Domestic.

**A SIDE DISH.**—Boil some eggs hard, cut them in two, the yolks to be taken out and beat up with a little parsley, pepper, and salt. Replace this into the whites, and serve up with a nice white sauce,

**PANCAKE PUDDING.**—Make a few thin, small pancakes, fry them a light brown, spread them with currant and apricot jam alternately, and roll them. Put them all round a mould; make some rather thick custard and pour into the middle, strewing it with the bits of pancake you have cut off in fitting them round the mould. Cover the whole with a small, thin pancake, and steam it for two hours.

**FRENCH SOUP.**—Take a large lump of butter, a table-spoonful of flour, and brown them in the saucepan you mean to cook the soup in. Cut up carrots, onions, celery, sorrel, and potatoes together very fine, then put all in the saucepan, with pepper and salt. Pour boiling water over them, and let all stew over the fire from three to four hours—it cannot simmer too much. A little thyme, parsley, cress and mint is a great improvement.

**TETE MARDREE.**—Take half a pig's head (if fresh, so much the better), the ears, and two or three feet, boil all these, in as little water as possible, till you can slip out the bones. Take all out, and, having separated the bones, boil them in the liquor until it is reduced. Cut the meat when cold, into squares, put it into the liquor, season to taste, and when boiling pour the whole into a mould. Leave it several hours to cool and set, and when turned out it will form a very pretty dish for luncheon or supper. The stronger the liquor the better.

**TO MAKE PORK SAUSAGES.**—Three-fourths of what are passed off for sausages in London, are nought but a *farrago* of faded meat of different kinds, chopped up with sour bread and faded lard; inasmuch, that if the parties who ventured to eat them knew in reality what "London sausages" were composed of, they would sicken at the thoughts of them. To regulate your appetite with a degree of wholesomeness and cleanliness, let your sausages be made after the following manner:—Obtain two pounds of lean young pork from a respectable dairy, supplied by a country farm connection in the country; let the same be chopped up as finely as it may be required to be; add to the meat six green sage leaves,



half an ounce of ground mace, the peel of half a lemon cut up very fine, one shalot, ditto, and one quarter of a pound of pigs' "flare," ditto; add salt to your taste. Mix up the whole suitably together, have your skins ready damped, and introduce your sausage meat into the same, filling them up somewhat loosely. You can make them of any size you please by twisting the skin or bladder round where you wish to leave off, and continue to fill up in succession, according to the size you have selected. Prick before cooking them with a coarse needle; invariably broil them, and, when they are done, serve them up with a basin of good apple sauce. Have mustard and ground pepper at hand.—N. B. Some persons are in the practice of mixing chopped veal with their pork, which makes very little difference in the flavor of the meat—indeed, if roast veal was eaten with mustard, not one in ten would contradistinguish it from pork.

**WASHING SILKS.**—No person should ever wring or crush a piece of silk when it is wet, because the creases thus made will remain forever, if the silk is thick and hard. The way to wash silk is to spread it smoothly on a clean board, rub white soap upon it and brush it with a clean hard brush. The silk must be rubbed until all the grease is extracted, then the soap should be brushed off with clean cold water, applied to both sides. The cleansing of silk is a very nice operation. Most of the colors are liable to be extracted with washing in hot suds, especially blue and green colors. A little alum dissolved in the last water that is brushed on the silk, tends to prevent the colors from running. Alcohol and camphene mixed together is used for removing grease from silk.

**WASHING WOOLENS.**—If you do not wish to have white woolens shrink when washed, make a good suds of hard soap, and wash the flannels in it. Do not rub woolens like cotton cloth, but simply squeeze them between the hand, or slightly pound them with a clothes pounder. The suds used should be strong, and the woolens should be rinsed in warm water. By rubbing flannels on a board and rinsing them in cold water, they soon become very thick.

**OUR DAILY TABLE.**—If the art of "plain cooking" was better understood, the masses of the people—the bone and sinew of the land, who perform most of the hard labor—would have vastly better tables at less cost of living. But the art of plain cooking is *not* understood half so well as it ought to be, and the consequence is that we live worse at a greater cost than we otherwise would. But how can we expect anything else when our daughters, even in the country, are, to a great extent, so theoretically brought up? How

many mothers fail in this respect to practically instruct their daughters in all the duties of house-keeping—cooking and baking in all their branches, as well as in the most economical system of management in the household. Many who read this will, I have no doubt, feel some compunctions at this grave neglect of parental, I may say, religious duty. But when I refer to the young women in our towns and villages, tenfold is the solemn injunction of our Lord utterly ignored. Especially is this the case in villages where factories abound, wherein are employed a large proportion of the young women of the place. How much do *they* know of house-keeping when they come to get married? Absolutely and literally nothing. Residing with their parents, and receiving good wages, and with plenty of leisure, what do most of them do? They spend their money upon their backs, parade the streets, join parties in dancing and flirting with the young men whom they attempt to capture with their finery, and let house-keeping never enter their thoughts. They all look forward to be married and go to housekeeping—and pretty wives and house-keepers many of them make, and comfortable lives they lead their duped husbands. Pardon me for being thus severe. I feel obliged to be so to enforce attention to what I say. I want *all* our young women, wherever they may be, and whatever may be their condition or employment, to give heed to what I say, who was once young like themselves and not old like now. *I want them all to study the business of housekeeping.* I want them all to be good cooks, good bakers, and good managers—but this important knowledge can be acquired only by systematically going through and through the whole routine of house-keeping. They will find it to be the most valuable *accomplishments* they can possess—accomplishments which will be more admired by a sensible husband and more lasting and valuable, and better calculated to secure his affections and promote his happiness, as well as the general comfort of the family, than any others that were ever created or invented. I speak from what I know. MARTHA, *In Germantown Telegraph.*

## The Dairy.

### Cheese Dairying—its Permanency and Profit.

There is perhaps no branch of business more permanent or profitable than dairying; and this must necessarily be so, from the fact that but little land, comparatively, is suited to the business, and hence there can never be that wide competition as results from other species of far

ming. The characteristics of a good dairy region, are a beautiful supply of springs and streams, and of pure and never failing water, and soil that will hold the grasses permanently. When these are wanted it is evident that dairy farming cannot be conducted with success.

The demand for cheese is increasing, it is believed in a ratio beyond that of the business of manufacturing, and as quality improves, foreign markets will gladly take all the surplus (after supplying home consumption,) that this county can produce, and at such prices as to render the business permanent and profitable. We are assured that England cannot manufacture cheese at less than 12½ cents per pound,—her rents and taxation are extremely high, while the quantity of cheese produced per cow, does not exceed that of our best dairies. What the foreign markets demand, is choice quality, and if we can furnish such as shall be equal to their own manufacture, the English Dairyman must ultimately be driven from the field, and turn his attention into other channels of agriculture.

The statistics of exportation for the last three years give abundant evidence of the progress we are making in supplying Europe with dairy products. The Journal of Commerce, under date of January 4th, 1862, publishes the following table of exports from New York, from which it appears that the increase in exportation of butter and cheese for the past year over that of 1860, it is truly astonishing, and affords encouraging assurance that our efforts to produce a really desirable article, have been and will be responded to by our European neighbors in a satisfactory manner. The subjoined table is the one referred to:

*Exportation of Butter, Cheese, and Lard  
from New York for 3 years.*

|          | lbs. butter. | lbs. cheese. | lbs. lard. |
|----------|--------------|--------------|------------|
| 1859.... | 2,494,000    | 9,287,000    | 11,015,000 |
| 1860.... | 10,987,000   | 23,252,000   | 18,860,000 |
| 1861.... | 23,149,000   | 40,041,000   | 47,200,000 |

Cheese manufacture for several years past has undergone important changes, and the desire to produce choice qualities is becoming more and more general. This has been brought about partly by the system of buying and selling for cash on delivery, which has been gradually adopted in this county, and discrimination according to the quality of cheese; so that every load and dairy of cheese stands on its own merits. A few years more of steady persevering effort on the part of our dairymen, to improve in this direction, will render Herkimer County cheese as far famed and widely sought for as its excellence deserves; continuing as it ever has done, to hold that prominence in market, that the genuine Jonhansberg holds among wines.—*Country Gentleman.*

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Bowed Legs, or "Sprung Knees in Horses.

Bowed or sprung knees is a very great deformity as well as a serious eye-sore to the owner of the subject; at the same time it seriously impairs the usefulness of the saddle-horse, for he is apt at any time to fall, bruise his own knees and break his rider's neck.—As a draught-horse, however, such an animal may prove serviceable, and perform ordinary duty, and, should he fall, he hurts no one but himself; yet he should never be used as a shaft-horse in a one-wheeled vehicle, because he is there liable to stumble and fall in consequence of the weight being thrown near the shoulders and four-legs.

This deformity is sometimes congenital, and manifests itself very soon after birth, yet such cases are rare; it is usually the result of rheumatic affection, which attacks the flexor tendons, their sheath, and the metacarpal ligament, which confines them to the back part of the knee.

When the disease is not congenital, we may observe predisposition lurking in the parts, which is known by the flexor tendons (which bend the leg,) being tied close in at the upper part of the cannon or shaft bone, just beneath the knee; any one with a practiced eye can easily detect this condition, for there is a want of symmetry in the limb, and at the same time, as light deviation from the perpendicular line may be observed in one, or perhaps both, fore legs.

Should the slightest curvature appear, and gradually augment, without any assignable cause, it may be inferred that the animal, owing to some peculiarity of conformation in the fore legs, is predisposed to curvature, or bowed legs; in such cases, overwork and rapid travelling become the exciting causes. At other times, when predisposition exists, faulty shoeing may prove an exciting cause; for example, when by paring too much from the toes, the heels are left thick, or when the heels of the shoe are made thicker than at the toe, the foot is then made to assume a faulty position, the tread is not natural, and curvature may be the result. The remedy is to pare the heels, and make the shoe of an equal thickness all around.

When the deformity is known, or supposed, to result from inflammatory rheumatism, which may be known by its sudden appearance, or its migrating from muscles to tendons, attended with more or less lameness, the parts are to be rubbed twice, daily, with a portion of equal parts of olive oil and sulphuric ether,



at the same time the animal must be properly shod.

In cases when a *gradual* curvature has taken place, and the animal is very much deformed, nothing short of a surgical operation can be of any benefit, and even this cannot be relied on in the case of an aged animal. The operation consists in a division of the flexor tendons, and the application of a shoe, having a long toe-piece welded to it, which prevents the animal from bending its knees; in this way the tendons cannot unite directly, but they finally do so indirectly, by *granulations*, which are thrown out from the divided surfaces, so thus the tendons acquire an inch or so of length.—*American Stock Journal*.

**LAMBS DYING FROM WOOL IN THE STOMACH.**  
—Lambs very frequently swallow particles of wool, which, in playfulness, they suck and bite from their dams; to prevent which, the dams, when this occurs, should be smeared with a mixture of aloes and water, or assa-fœtida and water. When they swallow the wool and it gets mixed with curd in the stomach, it forms hard balls that are indigestible; but the administration of a teaspoonful of soda mixed in water twice or thrice a day dissolves and digests the curd, if not too far gone. Calves frequently die of the same disease, and the only remedy yet found is the soda.—*Irish Farmer's Gaz.*

### Miscellaneous.

#### The Manufacture of Leather Cloth.

The manufacture of leather cloth as a substitute for Morocco leather, was commenced in the year 1749, in the city of Newark, U. S. The first specimen of it seen in this country, was exhibited in 1851. The Americans have had the merit of producing many labor-saving machines and articles of domestic convenience, and many of them are becoming increasingly known and extensively adopted in this country. It is certain that this article of leather cloth has superseded the use of leather for many purposes to which the old material has hitherto been applied, besides being put to uses for which leather is wholly unsuitable. Messrs. Crockett, the inventors and patentees commenced the manufacture of leather cloth in England in 1855, and their factory was a large workhouse, situate in one of those dreary, unpicturesque marshes at West Ham, in Essex, a locality somewhat famous for its insalubrious manufactures. The firm was known as the "Crockett International Leather Cloth Company." In 1857 Messrs. Crockett surrendered their business to a company formed under the

title of "The Leather Cloth Company Limited," which purchased the entire European business.

The new company, with a paid up capital of £90,000, and having Mr. A. Lorsont as their managing director, began the enterprise with great energy. They erected substantial and extensive premises which cover ten acres of ground, employing upwards of 200 men. They produce daily 1000 pieces of 12 yards long and 1½ yards wide, or 15,000 square yards; sufficient if laid end to end to reach from their factory to the warehouse in Cannon Street West—a distance of seven miles.

It will be evident that an article intended to resemble leather should be pliant, supple, and not liable to peel off or crack. These excellencies are to be obtained by the peculiar ingredients of the composition with which the cloth is covered, and the method of applying it. On entering the factory our attention was first directed to the boiling room, in which there are 12 furnaces, with a large cauldron over each for boiling linseed oil. This process is attended with considerable danger from the liability of the boiling oil to generate gas and explode; hence, a man is stationed at each cauldron stirring gently the boiling mass and watching a thermometer inserted in it, and which at the time of our visit stood at 580°. The oil is supplied to the boiling house by pipes from an adjoining building, where there is a huge tank with nine compartments containing 3,200 gallons each, or 28,800 altogether, amounting to 122 tons of oil. The boiled oil being allowed to cool is conveyed on a tramway to the mixing house, where, in a puddling machine, it receives several other ingredients, the principal ones being lampblack and turpentine, which being mixed into a composition is ready for use.

The cloth to which this composition is applied is known by the name of "greys," or unbleached cotton. It is of a peculiar manufacture, and made expressly for the company. The store room is a spacious building, and will contain an immense stock; at present it has 25,000 pieces, or 300,000 yards. Here the cloth is calendered, and cut into lengths of twelve yards. The two ends of each length are sewn together to make it endless; two sewing machines are in constant operation at this work. The pieces are then removed to the "milling" rooms, so called because they contain the mills in which the cloth receives the composition. These mills are rough looking wooden structures, having a drum at one end and a roller at the other, over which the cloth is passed, and then tightened by a crank and wheel at one end. A large frame-knife or scraper, is then dropped down close to the cloth, a measured quantity of composition being laid on the cloth along the edge of the knife, the mill revolves, and the cloth receives as much of the composition as can pass under the edge of the knife. The piece is then

carried to the heating room adjoining, and hung up on the rack to dry till next morning.

There are on the premises six milling rooms, with three mills in each, and having three men attendant upon each mill. The adjoining rooms for drying are heated by three rows of pipes laid along the wall. These pipes, during the day are at a temperature of about 130°. The temperature is increased towards the evening, and during the night to 160°, and it is the duty of the watchman to open the doors for ventilation and cooling preparatory to the men resuming their work for the next coating.

Of course, in a building so greatly heated, and having so much inflammable material within it, the danger of fire is imminent, but every precaution has been taken which prudence could dictate. The building is fire proof, the floors are of metallic lava, and the roof which is flat, is of the same material. A large pipe runs up the outside wall by the partition which divides the drying rooms, into each of which runs a branch pipe with a valve, which can be worked from the outside. A deluge of steam can by these means be poured into the rooms in a few minutes by day or night. There are fourteen fire plugs around the buildings, on the main of the East London Water Works, with hose and turn-cock at hand, so that ample means of extinguishing fire exist on the premises.

But to return to the manufacture. The coating being thoroughly dry, the cloth is then taken to the "rubbers" whose business it is to remove all inequalities from the surface and make it perfectly smooth. This is done by the "rubbing machine," (an ingenious contrivance of M. Eagles, the manager,) by which the cloth is made to pass between two rollers revolving in opposite directions. These rollers are covered with pumice stone, and do the work completely and expeditiously, which, till lately, was done by hand at great expense of labor. The "coating" and the "rubbing" being repeated four, and in the case of heavy goods, five times, the cloth is ready for the "paisters." The "painting rooms" contain machines similar to the "mills;" but instead of a drum they have a roller at each end, over which the cloth passes slowly, and a man at each side supplies the paint, "meeting each other half way." Dependant partly on the colours, and partly on the article to be produced, is the number of coats of paint to be applied. Sometimes two will be sufficient, at other times four are necessary. The last coat receives several applications of a peculiar elastic enamel, chiefly of copal varnish, to protect it from the action of the atmosphere.

At this stage of the process the edges of the cloth are rough and have to be trimmed, and the seam by which the ends are sewn together has to be cut. This is done by a machine called the "Guillotine," and we now follow the cloth to the "grainer." This latter, and to the ordin-

ary leather cloth, finishing process, is done by a remarkably beautiful iron machine, having two rollers, the upper one being of polished iron cut obliquely on the surface, the other one of paper. Between these two rollers the cloth passes twice, and receives its external resemblance to morocco leather. There are six machines used for this finishing process, and others for embossing from the small diamond to the large mediæval pattern. The latter consumes much more time in passing through the machines. The cloth is now stamped with the trade mark, labelled, and rolled up ready for transmission to the warehouse in Cannon Street West.

On looking at the pieces when finished, one is struck by the extreme cleanness of the inner side after passing through so many soiling operations; this is owing to the practical skill with which the men handle the cloth, and to the agility with which they remove it from the several machines, and carry it to the drying rooms. While watching the process, we thought that in many respects, it was similar to the tanning with sumach, from the leaves and stalks of the *Rhus coriaria*, by means of which skins are made into morocco leather. As the leather cloth can be made permanently soft and elastic by the oily matter combining with the texture of the cloth, as it does with the fibres of the skin, the imitation is complete and successful.

There is another room in this establishment, specially interesting to the artist, where the cloth is printed in gold and colours, in designs which are really chaste and beautiful, and which, when used for the furniture and hangings, adorn rooms with something of oriental splendour. Here, too, there are table-covers with floral borders rich in colour and choice in grouping, with centre-pieces, which, as specimens of decorative art, are very effective. Many of these will be displayed at the International Exhibition, and, we doubt not, will excite both surprise and admiration.

The mixing room is a kind of *sanctum* of the manager's, and we suppose that from the skill with which the colours are prepared arises much of the excellence of the company's manufacture. In a room adjoining there are sixteen color-grinding mills, constructed on the American principle, and worked by machinery, as indeed almost everything on the premises seems to be. The machine which sets all in motion is a high-pressure double cylinder engine of 50-horse power made by Woods, of Halifax. There are three immense Cornish boilers by Hill, of Heywood, which have been tested to a water pressure of 130 lbs. to the square inch and represented 60 horse power. One of these is sufficient to work the engine by day and heat the drying rooms by night. We observed that, by the generosity of the company, a part of their premises had been given for the use of the Fifth Es-



sex Rifle Volunteers, the drill-room and armoury are magnificent apartments, such as are seldom seen devoted to such a purpose.

A writer in a very useful work on the "Manufactures of Great Britain," asks somewhat triumphantly, "What substitute could be found for leather? a substance at once durable and elastic, affording a protection from wet and from cold, capable of being formed into innumerable useful articles, and susceptible of a high degree of ornament, and supplying lining to our carriages and covers to our books." This book was published in 1848 under the direction of the "Committee of general literature and education," and now in 1862, we have a substitute answering all the requirements here specified.

As to protection from wet and cold, the whole American army is equipped in leather cloth in the shape of capes, leggings, and knapsacks, our upholsterers can vouch for its durability and elasticity. The useful articles into which it can be made, and the degree of ornamentation it can receive, are becoming every day more manifest. We line our railway, our street carriages, and our hats with it; and as to our books, if they are not covered with it they ought to be. Truly our progress in art and science is defying all prediction as to what we may not accomplish, and rendering absolute many of our familiar proverbs, and none more strikingly so than that "there is nothing like leather."—*Mechanics' Magazine*.

**THE DUST HEAPS OF LONDON.**—The contents of every dust bin in this vast London are carried away periodically. The dustman receives a small gratuity from each householder, and when he has collected a cart load, he demands another shilling at the gate of the Paddington wharves as he deposits it within their precincts. A dust heap is very valuable to the contractor, and a large one is said to be worth four or five thousand pounds. It has to be sifted, sorted and disposed of. We can give but a slight idea of its miscellaneous contents. Its chief constituent element is cinders, mixed with bits of coal, from the carelessness and waste of thousands of servants, which the searchers pick out of the heap to be sold forthwith. The largest and best of the cinders also are selected for the use of laundresses and braziers, whose purpose they answer better than coke. The far greater remainder is called breeze, because it is the portion left after the wind has blown the cinder dust from it, through large upright iron sieves, held and shaken elbow high by the women who stand in the heap, whilst men throw up the stuff into the sieves. The breeze and ashes also are sold to the brick makers, the ashes are mixed with the clay of the bricks, and the breeze is used as a fuel to burn between their layers.

But the heap likewise includes soft ware and hard ware. The former includes all vegetable and animal matter—all that will decompose.

All these are carried off to be employed as manure. Stale fish and dead cats come into this list—the skins of the latter being stripped off by the sifters, who can sell them for fourpence or sixpence, according to their colour, white being most in request. The "hardware" does not merely mean broken pottery, though of this there is great abundance. Part of the pottery is matched and mended by the women who find it, and becomes their perquisites; the rest, with the oyster-shells, is sold to make new roads. But hardware in the dust heaps means rags, which go to the paper makers; bones, which go to the bone boilers; old iron, brass and lead, to salesmen of those metals; broken glass, to old glass shops; old carpets, old mattresses, old boxes, old pails, old baskets, broken tea-boards, candlesticks, fenders, old silk handkerchiefs, knives, and salt cellars, not forgetting old shoes, which go in baskets to the "translators," who turn old shoes into new; everything in short that the householder has thought "not worth mending," besides many a wasteful addition which the masters never knew, from mansions where recklessness and extravagance bear rule. Some of the contents are the sifters' perquisites—a certain amount of cinders, and as much paper and wood as they can carry, and corks of bottles, by which alone some boast they can find themselves in shoe leather: pill boxes also, and gillipots, are their lawful property. Jewelry, silver forks and spoons, and money, are occasionally found, and too often appropriated by the finder. One day a check for a considerable sum was discovered among the waste paper.

**THE ROOK AND THE CATERPILLAR IN LUSS GLEN.**—A few weeks since a colony of caterpillars made an unwelcome lodgment in the beautiful oak copse in Luss Glen, the property of Sir James Colquhoun. In the course of a short time the trees, covering an aggregate space estimated at thirty acres, were completely stripped, and the trunks are now as bare of foliage as they are in the heart of winter. The hand of man was perfectly helpless against these pests, which marched forward, or rather which were eating their way onward, millions strong, and the utter destruction of this beautiful glen seemed only to be a question of time. At this stage a new adventurer appears on the scene; for it fortunately so happened that a wandering family of rooks flying over the glen, at once discovered that of which they were in quest—viz., rations in immeasurable abundance. They commenced an assault upon the caterpillars at once, and having dined most heartily, they generously departed to make proclamation to all the rook brotherhood of the land of Goshen upon which they had lighted. Although the nearest rookery is eight miles distant, an advanced guard set out from it without a moment's delay, and was immediately followed by the whole force of the

rookery. By some extraordinary telegraph other crow communities picked up the tidings, and within a day or two it is believed that every rook within a circuit of twenty miles had found his way to the grub feast in Luss Glen. Our informant, who witnessed the scene in the beginning of the week, states that the glen and the fields around it are blackened with rooks, and that the caterpillars have fairly met their match. The birds commence the assault by the earliest streak of morning light; and after making a copious breakfast, they retire to the fields for rest and digestion, returning to the feast time after time until darkness covers the land, and they can eat no more. The rooks which live farthest from the spot have deserted their ordinary homes for the time being, and have pitched their tents in the glen, where it is presumed they will remain as long as there are grubs to feed them. As it is, the progress of the caterpillars has been completely checked since the birds have commenced in earnest, and it is believed that before long they will have exterminated these destructive insects. The rooks are ably seconded by a corps of jackdaw auxiliaries, and indeed they have allies in most every bird that flies; being the most hungry of the assailing force in Luss Glen.—*Glasgow Daily Herald.*

**TAKE CARE OF THE FEET.**—"Of all parts of the body," says Dr. Robertson, "there is not one which ought to be so carefully attended to as the feet." Every person knows from experience that colds, and many other diseases which proceed from colds, are attributable to cold feet. The feet are at such a distance from "the wheel at the cistern" of the system, that the circulation of the blood may be very easily checked there. Yet for all this, and although every person of common sense should be aware of the truth of what we have stated, there is no part of the human body so much trifled with as the feet. The young and would-be genteel-footed, cramp their toes and feet into thin-soled, bone pinching boots and shoes, in order to display neat feet, in the fashionable sense of the term. There is one great evil, against which every person should be on their guard, and it is one which is not often guarded against—we mean the changing of warm for cold shoes or boots. A change is often made from thick to thin-soled shoes, without reflecting upon the consequences which might ensue. In cold weather boots and shoes of good thick leather, both in soles and uppers, should be worn by all. Water-tights are not good if they are air-tights also; India-rubber over shoes should never be worn except in wet splashy weather, and then not very long at once. It is hurtful to the feet to wear any covering that is air-tight over them, and for this reason India rubber should be worn as seldom as possible. No part of the body should be allowed to have a covering that entirely obstructs the pas-

age of the carbonic acid gas from the pores of the skin outward, and the moderate passage of air inward to the skin. Life can be destroyed in a very short time, by entirely closing up the pores of the skin. Good warm stockings and thick-soled boots and shoes are conservators of health, and consequently of human happiness.

**WHAT IS DYSPEPSIA?**—With due attention to temperance, exercise, and early hours, you may set dyspepsia at defiance. Neglect one of these precautions, and you lay yourself open to the approaches of the enemy—neglect two of them, and it is hardly possible that you can escape. And above all things, keep this in mind, that no other disease or affection of the body is so stealthy or insidious as dyspepsia. If the first few instances of carelessness or transgression were to be visited with pains and penalties that afflict the patient when the malady has become chronic, few men would be so insane, or so obstinately reckless as to postpone the work of reformation. But the earlier symptoms are rarely of an alarming kind. The appetite is not sensibly affected, though the digestion is impaired; and the complaint seems to be limited to flatulency and heartburn. Such unpleasant sensations, however, can be easily removed. Essence of ginger and fluid magnesia, seldom fail to give relief, and the patient flatters himself that there is no ground for apprehension. But the symptoms do not disappear. They recur with great frequency; and the antidotal doses, though increased, are found to have lost their efficacy. The stomach has now become more seriously deranged. All kinds of food generate acid; and in this stage the patient usually has recourse to the carbonates of soda or potash, which in their turn give a temporary relief, though without in any way arresting the disorder. By this means dyspepsia, like an insidious serpent, has fairly folded the victim within its embrace, and is squeezing him at its leisure. Everything he eats disagrees with him, and seems to undergo some wondrous transformation. That which was served up at the table as haggis, seems converted, two hours afterward, into a ball of knotted tow—a mutton chop becomes a fiery crab, rending the interior with his claws; and every rice-pudding has the intolerable effrontery to become revived as a hedge-hog. After that come nausea and vomiting. You derive no benefit from the food you swallow. From twelve stone weight you dwindle down to ten. Your countenance becomes ghastly, your eyes hollow, and you totter prematurely upon your pins. The mere notion of exercise becomes distasteful. You feel as if you had no strength for anything. You are pensive, moody, and irritable. Your mind loses its elasticity and power; and when you sit down to compose, instead of manly matter, you produce nothing but the dreariest of drivel.—*Blackwood's Magazine.*



### The Points of a Short-Horn Cow.

The following features constitute, I trow,  
The beau-ideal of a shorthorn cow:  
Frame massive, round, deep-barrelled, and  
straight-backed;  
Hind quarters level, lengthy, and well-packed;  
Though wide, fleshed inwards, plumb almost to  
hock;  
Twist deep, conjoining thighs on one square  
block;  
Loin broad and flat, thick-fleshed, and free from  
dip;  
Back ribs "well home," arched even with the  
hip;  
Hips flush with back, soft-cushioned, not too  
wide;  
Flanks full and deep, well forward on the side;  
Fore-ribs well fleshed, and rounded like a drum;  
Fore-flanks that even with the elbow come;  
Crop "barrelled," flush with shoulder and with  
side;  
Girth large and round—not deep alone, but wide;  
Shoulders sloped back, thick-covered, wide at  
chine;  
Points snug, well-fleshed, to dewlap tapering fine;  
Neck-vein filled up to well-clothed shoulder point;  
Arm full above, turned in at elbow joint;  
Legs short and straight, fine-boned 'neath hock  
and knee;  
Belly cylindrical from drooping free;  
Chest wide between the legs, with downward  
sweep;  
Brisket round, massive, prominent, and deep;  
Neck fine at head, fast thickening towards its  
base;  
Head small, scope wide, fine muzzle, and dished  
face;  
Eyes prominent and bright, yet soft and mild;  
Horns waxy, clear, of medium size, *unfiled*;  
Tail fine, neat hung, rectangular with back;  
Hide soft, substantial, yielding, but not slack;  
Hair furry, fine, thick-set, of color smart;  
Udder well forward, with teats wide apart.  
These points, proportioned well, delight the eye  
Of grazier, dairy-man, and passer-by,  
And these to more fastidious minds convey  
Appearance stylish, feminine, and gay.—*Mr.  
Carr, of Stackhouse, in the "Highland So-  
ciety's Journal."*

A SAND STORM IN CHINA.—Extract from a  
private letter, dated, Tien-tsin, March 31, 1862:  
—"We had an awful dust, or sand storm, last  
week, which kept us in darkness or nearly so  
for three days. It was the most fearful looking  
thing I ever saw; particularly so at its com-  
mencement, at about three o'clock in the after-  
noon. In five minutes it was pitch dark, and  
we had to light candles. This lasted three  
hours, when the wind increased. 'Tis almost  
impossible to describe it. The very smallest,  
finest, sand seemed drawn out of the earth by  
electricity, and penetrated everywhere. We

all looked like red Indians, and once or twice  
during the first hours, when it was so intense,  
if the sun got a chance through a break, the  
world seemed on fire, then total darkness  
again; and so it continued more or less for  
three days. Very many of the Chinese who  
were at work in the fields perished, as they  
could not find their way home, and died for  
want of shelter. A party came in from Peking  
more dead than alive, and it is a wonder how  
they reached, for they scarcely knew what they  
did or how they escaped. Sand storms are not  
unusual here, but nothing like this has occurred  
for nearly half a century. At Taku the Chinese  
suffered severely, but Europeans seemed to  
have escaped most wonderfully everywhere.—  
The foreign shipping also, both inside and out-  
side the bar, were but little damaged, whilst sad  
havoc took place among the Chinese, both as re-  
gards their lives and property."

THE SPARROW A SCAVENGER.—Nobody will  
deny that the city sparrow is a scavenger, ay,  
and a "regular dustmen" too. There is very  
little of the Adonis about *him*! Washing and  
bathing are unknown, uncared-for-luxuries. He  
glories in dirt. Plump as an alderman, he  
rather waddles than hops, and pays far more at-  
tention to his stomach than to his *personnel*.—  
This last shows sad negligence. Suiting him-  
self to his company and his situation, he is rare-  
ly in a state of repose. Observation tells me  
that eating, drinking, bustle, noise and confusion  
are his strong points. His life is one continued  
round of dissipation. Early and late he may be  
seen slily stealing into some "likely" place  
where he may discover something for his inside.  
Up to every move, deeply read in the physiog-  
nomy of butchers' boys, vagrants, and birds' en-  
emies generally, he is never caught napping.—  
Wide-awake to them all, he cunningly watches  
his opportunity, slips in, commits theft, steals  
out, and is "gone" almost before he is seen.—  
And how thoroughly does he relish stolen prop-  
erty. Boys, girls, and birds, are all alike in this  
respect, I fear.

Stolen sweets are always sweeter,  
Stolen kisses much completer,  
Stolen looks are "nice" in chapels,  
Stolen, stolen be your apples.!

So sings the poet. I have neither the wish  
nor the power to contradict him.—WM. KIDD,  
*in the Queen.*

HOGS AND CURCULIO.—It is the practice of  
many to allow their hogs to run in the orchard  
and gather up all the fruit as it falls. In this  
way the insect is not allowed to leave the fallen  
fruit and perpetuate its species in the ground.  
If no hogs are about, the fruit should all be  
picked up and destroyed before the insect leaves  
it.

**PRESENTS FROM HER MAJESTY TO THE ZOOLOGICAL GARDENS, REGENT'S PARK.**—A short time ago her Majesty received twelve or fourteen beautiful Brahmin bulls and cows, as a present from India. Desiring that our Zoological Gardens should participate in the gift, Mr. Bartlett was last week directed to proceed to Shaw Farm, in the Home-park, at Windsor, and he there selected from the splendid herd a male and female—the former a pearly grey and the latter a creamy white—both very fine animals. Her Majesty also presented a wild sheep of North Africa (female), called the *aoudad*, the society being already in possession of a male of the same species.—*London Field*.

**BREEDING FROM YOUNG SOWS.**—The *Maine Farmer* says "it is quite common to breed from young sows, say full pigs, to come in with a litter of pigs when one year old, a practice to be utterly condemned, and if continued in the same family for a few generations of the swine, they will be found to dwindle down from three or four hundred hogs to two or three hundred. It is much better to keep the sow three or four years, or even much longer. They have been kept some fifteen years to advantage. The hog is some years in his natural state in maturing. It is a fact well known, at least to every Irishman in the "ould" country, that pigs from old sows will grow into hogs some thirty or forty pounds heavier than those from young ones.

**TIMOTHY MEADOWS.**—Care should be taken in cutting timothy not to cut too close, as the roots of this grass are bulbous, and if cut too close or feed too close, the top of the bulb is injured and the wet causes it soon to decay and die. Timothy meadows should always be rolled in the spring to secure as even a surface as possible.

---

## Editorial Notices, &c.

---

**THE LONDON QUARTERLY REVIEW**—July, 1862. Contents; Memoirs of Sir Marc Isambard Brunel, a most interesting biography; Sussex; Lives of the Archbishops of Canterbury; The Volunteers and National Defence; English Poetry, from Dryden to Cowper; The International Exhibition; The Hawaiian Islands; and The Bicentenary.

**THE EDINBURGH REVIEW**,—July, 1862. Contents; The Explorer of Australia, an article of great and universal interest; Wellington's Supplementary Despatches; Sir G. C. Lewis's Astronomy of the Ancients; Earl

Stanhope's Life of Pitt; Troyon's Lacustrine Abodes of Man; Weber's Gleanings from German Archives; Iron, its uses and manufacture; Remains of Mrs. Richard Trench; and Dollinger on the Imperial Power.

These numbers commence new volumes, affording a good opportunity for new subscribers to procure those valuable productions, which are issued by LEONARD SCOTT & Co., 79 Fulton-street, New York, within two or three weeks of their original publication in London, and at one third of the English price.—The above, with the North British and Westminster Reviews, and Blackwood's immortal Magazine, can be had for the unprecedentedly low charge of \$10 per annum! Or, they can be subscribed for separately, each Review, (quarterly) \$3, and *Blackwood*, (monthly) \$3 *per annum*. BLACKWOOD for August is, as usual, exceedingly interesting.—We are happy to know that these British periodicals, of the very highest literary and scientific character, are, in consequence of these cheap and well executed reprints, being extensively circulated throughout the United States and the British Provinces.

**SALE OF PURE-BRED STOCK, SHEEP AND PIGS**—We have much pleasure in calling the attention of our readers to Mr. Stone's Advertisement in the present number. Mr. Stone merits as an importer and breeder of Short-horns and Herefords, and of the most approved varieties of sheep and pigs, are now too well known and appreciated to need any recommendation from us. He has spared neither time nor expense in getting from Britain the best specimens, and no one can visit his farms at Guelph and observe the management carried on there without being convinced that their owner is a man in whose judgment and integrity the public may safely place confidence. Mr. Stone's animals, whether cattle, sheep, or pigs, are alike a credit to himself and to Canada: and that his brother farmers think so is shown by their having elected him President of the Agricultural Association of Upper Canada for the present year. We trust that the approaching sale at Moreton Lodge will be equally successful with those of previous occasions.



## MORETON LODGE NEAR GUELPH, C. W.

### Important sale of Imported & Pure Bred SHORT HORNED CATTLE

Cotswold, Leicester and South Down Sheep,  
Berkshire and Small White breed of Pigs.

Mr. W. S. G. Knowles, begs to announce that  
he has received instructions from Fred. Wm.  
Stone, Esq. to offer

### FOR SALE. BY AUCTION ON WEDNESDAY, 15TH OCTOBER NEXT

At Morton Lodge, near Guelph, Canada West  
Thirty Imported and Pure Bred

### SHORT HORNED CATTLE, One Hundred and Fifty Imported and Pure Bred COTSWOOD, LEICESTER & SOUTHDOWN SHEEP,

Consisting of Rams, Ram Lambs, and Ewes.  
And 25 Berkshire and small White Breed of

**PIGS**, of different ages.

The Short Horns are Imported and bred from  
some of the most fashionable Herds, such as  
Capt. Gunter's, Col. Kingscote's Messrs. Tan-  
queray's Ambler's Bolden's, Sandy's, Jonas  
Webb's, Smythe Owen's and other eminent  
Breeders. The Cotswood Sheep are imported,  
or bred from Imported Stock. From the flocks  
of Messrs. Ruck, Slatter, Brown, Langston,  
Gare, Wakefield and other celebrated breeders.  
The Leicester's imported from Mr. Pawlett's  
flock, and the Southdowns, imported and bred  
from the celebrated Buckland and Babraham  
Flocks of Sir R. Throckmorton and Jonas  
Webb. The Berkshire pigs, from the finest  
Buckland Stock. The small Wheat Breed from  
Capt. Gunter's

Catalogues, with Pedigrees, and othe  
particulars, are now in preparation, and will  
shortly be issued, and may be had on application  
to Mr. Knowles, or of Mr. Stone, of Guelph.

Guelph, 8th Sept. 1862.

### EAST RIDING YORK

Agricultural Society Fall Show,  
AT WELLINGTON HOTEL GROUNDS,  
MARKHAM VILLAGE, 9th October, 1862.

All Entries to be made by the evening of the  
9th, or to be peremptorily excluded.

A. BARKER,  
Secretary.

### Horse Infirmary and Veterinary Estab- lishment, Corner of Bay and Temperance Streets, Toronto, C. W.

A SMITH, Licentiate of the Edinburgh Vet-  
erinary College, and Veterinary Surgeon to  
the Board of Agriculture of U. C., begs to return  
his thanks to the Public generally for their sup-  
port since opening the above mentioned establish-  
ment, and respectfully solicits a continuance of  
the same.

And also begs to announce that Veterinary  
Medicines of every description are constantly  
kept on hand:—Such as, Physic, Diuretic,  
Cough Cordial, Tonic Condition, and Worm  
Balls and Powders. The constituents compos-  
ing the Cough-balls, have been found (by Pro-  
fessor Dick, of Edinburgh) most serviceable in  
alleviating many of the symptoms of Broken-  
wind or Heaves in Horses. Colic Draughts, &c.,  
a mixture which owners of Horses should always  
have beside them.

Liniments for Sore-throat, Sprain, Curb,  
Spavin, Ringbone.

Blistering Ointments. Liquid and sweating  
Blisters.

*Horses bought and sold on commission.*

Toronto, Aug. 30th, 1862.

### THOROUGH-BRED STOCK FOR SALE

THE Subscriber has for sale DURHAM and  
GALLOWAY CATTLE, LEICESTER,  
COTSWOLD, and LINCOLNSHIRE SHEEP,  
Male and Female 10 Durham and Galloway  
Bull Calves—price from \$100 to \$200; 20  
Shearling Rams, weighing from 230 to 285 lbs.  
each—Price from \$50 to \$100 each.

JOHN SNELL,  
Edmonton P.O., C. W

Four miles from Brampton Station G.T.R.

### FOR SALE!

### Ayrshire Cattle, Leicester Sheep, and Berkshire Pigs.

THE Subscriber offers several Young Bulls,  
Heifers and Cows, on very Liberal Terms.  
Specimens from his *Prize Herd* will be on Ex-  
hibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.

Aug. 30th, 1862.

6-mos.

### THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham  
and Galloway Cattle, male and female.

Leicester, Cotswold, Lincolnshire, Down and  
Cheviot Sheep; Cumberland and Yorkshire im-  
proved Pigs. All imported stock.

GEORGE MILLER,

Markham, June 3rd, 1862.

6t.

**TO BE SOLD BY AUCTION,***On Thursday, Oct. 16, 1862,*

**THE** well-known Herd of **NORTH DEVON CATTLE**, consisting of more than forty head of Cows, Bulls, and Heifers; one hundred and seventy West and Southdown Ewes and Rams; pure blooded Essex Pigs, in pairs fit for breeding.

Catalogues of description, with pedigrees, may be had fourteen days before the sale, on application at the office of the *Galt Reporter*, if by letter, prepaid. Credit of 12 months may be had on approved endorsed paper.

**THE SPLENDID FARM,**

Consisting of upwards of **THREE HUNDRED ACRES**, to be sold by private bargain, on accommodating terms.

**DANIEL TYE.**

County Waterloo, Wilmot, August 1862. td

**THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by **W. C. CHEWETT & Co.**,  
King Street East, Toronto.

**The Agriculturist,**

**OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,**

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

**Contents of this Number.**

|                                          | Page. |
|------------------------------------------|-------|
| The Provincial Exhibition.....           | 545   |
| The Grain Aphis.....                     | 545   |
| The Plant-Louse, or Grain Aphis.....     | 546   |
| Chinese Sugar Cane.....                  | 549   |
| Woods at the International Exhibition..  | 549   |
| Cultivation of Wheat in Canada.....      | 551   |
| A Drop of Rain Water.....                | 554   |
| Breeding Horses, Sire and Dam.....       | 558   |
| Judging Stock, Provincial Exhibition.... | 559   |

**AGRICULTURAL INTELLIGENCE:**

|                                         |     |
|-----------------------------------------|-----|
| Agricultural Shows this Autumn.....     | 559 |
| Great Annual Sale of Shropshire Sheep.. | 560 |
| Malignant Disease in Sheep in England.  | 560 |

**HORTICULTURAL:**

|                                        |     |
|----------------------------------------|-----|
| Dwarf Apple Trees once more.....       | 562 |
| Toronto Horticultural Society.....     | 662 |
| Interesting to Fruit Growers.....      | 563 |
| Decayed Orchards.....                  | 564 |
| Fruit Prospects and Birds.....         | 564 |
| The Birch, its varieties and uses..... | 565 |
| Qualities of Fine Vegetables.....      | 566 |

**DOMESTIC:**

|                            |     |
|----------------------------|-----|
| Domestic Receipts, &c..... | 566 |
|----------------------------|-----|

**THE DAIRY:**

|                                            |     |
|--------------------------------------------|-----|
| Cheese Dairying, its Permanency and Profit | 567 |
|--------------------------------------------|-----|

**VETERINARY DEPARTMENT:**

|                                        |     |
|----------------------------------------|-----|
| Bowed Legs, or Sprung Knees in Horses. | 568 |
|----------------------------------------|-----|

**MISCELLANEOUS:**

|                                        |     |
|----------------------------------------|-----|
| The Manufacture of Leather Cloth.....  | 569 |
| The Dust Heaps of London, &c., &c..... | 571 |

**EDITORIAL NOTICES:**

|                                           |     |
|-------------------------------------------|-----|
| The Reviews; Sale of Pure bred Stock. &c. | 574 |
|-------------------------------------------|-----|

**BOARD OF AGRICULTURE.**

Office in the New Agricultural Hall, corner of Yonge and Queen streets, Toronto.

**HUGH C. THOMSON,**

Toronto August, 1862.

*Secretary.***FOR SALE.**

**A** LOT of thorough bred **Essex Pigs**,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

**JAMES COWAN.**

Clochmor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE

# Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, OCTOBER 1, 1862.

No. 19.

## The Provincial Exhibition.

The Seventeenth Annual Show of the Agricultural Association of Upper Canada was held in the City of Toronto, Sept. 23—26th, 1862. The weather throughout being delightfully fine, and the capacious grounds affording ample space for the large amount of Live Stock, implements, &c., together with immense crowds of visitors, the recent exhibition may be pronounced not only a decided success, but, upon the whole, superior to any former occasion. A liberal grant being given by the corporation of the city, the Local Committee were enabled to erect extensive ranges of stables, sheds, &c., of a convenient form and permanent character, which afforded good accommodation for the large amount of fine animals, in all classes, that constituted a striking and pleasing characteristic of the show. We are indebted to the City Daily Press, and other sources of information, for the following Report. The official Prize List, which will appear in our columns as soon as the final corrections are made, and the material made up, will inform the reader of the awards of the judges. In the mean time this information has been communicated to the public by the Daily Press of this city, involving a large amount of trouble and expense to the proprietors of those journals. Our list will contain the necessary corrections and additions.

## HORSES.

The exhibition of Horses was not only unusually large, but, upon the whole, of a quality never before equalled at our Provincial Shows. That is to say we never had before so large a number of horses, possessing so superior excellence; a remark that will apply to almost every other department of live stock; thereby indicating in an unmistakable manner, a healthy state of progress.

Of Blood Horses, there were 24 entries in the different sections, comprising several good specimens; but it must be confessed that on the whole there was a deficiency in this class. In the thorough-bred Blood Mares and Fillies the competition was not extensive; Mr. White, of Bronte, succeeded in carrying off the greater number of prizes in this class, and deserves credit for the pains which he has bestowed on the selection of his stud, which ranks among the first in Upper Canada. In the large class of Agricultural Horses, numbering 71 entries, scarcely an inferior animal was exhibited. The Stallions, 4 years and upwards, and also three years, were, with scarcely an exception, particularly good.—There may be sufficient grounds for differences of opinion as to the precise weight and style of horses for agricultural purposes in this country,—but it must be admitted, we think, on the whole, that deep and thorough cultivation of our older and heavier soils cannot be effected by the lighter kind of horses that have been hitherto in ordinary use. The infusion of Clyde blood is regarded with favour by our thorough-going cultivators.

In class third, composing Road or Carriage Horses, a large number of animals were shown. In stallions of four years and upwards more than 20 entered for competition, mostly very superior animals, and highly creditable to the

Province. Mr. Armstrong's horse "*Diploma*," was awarded the first prize. He also succeeded in gaining the Diploma of the Association, as the best horse of any age or breed. Some very fine trotting horses were exhibited in this class, and these belonging to the city of Toronto were worthy of notice; viz.; "*Pathfinder*," the property of Mr. Bond, Sheppard Street; and "*Toronto Chief*," and "*Governor Clark*," belonging to Mr. S. S. Halladay. The Brood Mares, Colts and Fillies, were as classes, decidedly superior. In saddle and carriage horses the competition was limited, and although several good animals were shown, there is, it must be acknowledged, considerable room in this department for additions and improvement. In the class of Heavy Draughts, four years and upwards, it may be mentioned; were five imported horses of great merit. Brood Mares, colts and fillies were also excellent. It short it was the expressed opinion of many competent judges that this exhibition of horses would be, as a whole, with difficulty surpassed by any country.

### CATTLE.

Considered in reference to the effect upon the advancement of the country, it is probable that the annual show of cattle is of more moment than any other portion of the Exhibition.—There is more to be accomplished by competition in this department than in any other. The immense improvements which have resulted from careful breeding, have caused the most energetic and zealous agriculturists to enter into stock raising, as a pursuit which calls forth and rewards all their exertions. And they look with great interest to the annual competition, when they receive the reward of their labours.

The present show of cattle is, as a whole, better than that of any former year, though there were deficiencies in some departments. One misses the fine herd of Devons of Mr. Lock of Yar-mouth, who has betaken himself to the Western States, but the herds of Mr. Tye of Wilnot, Mr. William Scott of New Hamburg, Mr. Courtice of Bowmanville, Mr. Pincombe, of London, Mr. Thomas Allen, of Whitby, Mr. Rykert of St. Catharines, Mr. John Moore of Etobicoke, Mr. J. W. Wilson of Flamboro and others, show that this small but beautiful and useful breed has its supporters among our best stock raisers.

Durhams, Herefords, Devons, Ayrshires, and Galloways have each their advocates, and there was about as keen opposition among them as there is in politics or divinity. In this show, as always, the short-horns maintained their supremacy as the best animals for general purposes, the best for the butcher, and the best to improve the ordinary stock of the country, the largest, and most easily fatted. The Durhams have the majority, but their reign is disputed. Mr. Stone,

of Guelph, the present President of the Agricultural Association, who stands at the head of our importers, (although Mr. George Miller, of Markham, comes very near him,) has lately brought from England a herd of eleven Herefords. He, at all events, does not appear to give weight to the common objection to this breed that they are less kindly feeders than the short horns. The only exhibitors of Herefords were, however, Mr. Stone and Mr. J. R. McMicking, of Queenston.

The Ayrshires, also, had their adherents. The "short horns" pooh pooh them. They were small, they do not make meat for the butcher, but as dairy cattle they are admitted to be unrivalled. They are sent from the country of their original growth, from which they take their name all over England and Scotland. A good judge engaged in the importation of stock told us that if he were about to commence dairy farming he would have no other cattle but Ayrshires. Crossed with Durham also, it is alleged that they suit the butchers well. Messrs. Patrick R. Wright, of Cobourg; John P. Wheler, of Scarboro; R. L. Denison, of Toronto; George Stanton, of Paris; George Morton, of Leeds; John Torrance, of Scarboro; George Scott, of Woburn; Simon Beattie, of Markham; Joseph Boyle, of Flamboro; Hendrie & Co., of Hamilton; and George Miller, of Markham, were the chief exhibitors of this class.

The Galloway cattle have been but a few years introduced into Canada; but they have made extraordinary progress. The number exhibited at the show was very large, and the specimens very fine. This breed does not mix well with the native cattle, but they thrive well in this country by themselves. They are very hardy and the beef is good, but the "short horns" say that they cannot produce such sirloins as their favourite breed. The chief exhibitors of Galloways were Messrs. Snell, of Chinguacousy, Kyle, of Ayr; Auld, of Hamilton; McClain, of Clover hill; James Graham, of Woodbridge; George Davison, of Unionville; George Anderson of Varna; Somerville, of Vaughan; G. Z. Rykert, of St. Catharines; George Roddick, of Port Hope; Alex. Kerr, of London; Arthur McNeil, Woodbridge; John Stuart, Waterdown; John Fleming, Vaughan; John Hunter Exeter; George Miller, Markham; David Mtssenger, Cooksville; and last not least, James Mecalf, Eglington.

The "short horns" are almost too numerous to mention. Almost all the old exhibitors were present, and some new ones. Messrs. Stone, Guelph; Bentley, Cooksville; Bellwood, Newcastle; George Miller, Markham; George Cooper, York; Edward Jones, Thorold; Edward Huggins, Embro; G. D. James, Toronto; John Watt, Fergus; Donald Robertson, Queenston; John Iles, Guelph; John Graham, Paris; James White, Bronte; Simon Shunk, York; G.



Z. Rykert, St. Catherines; Henry Welford, Woodstock; John White, Georgetown; Gavin Craig, Grafton; Thomas Martindale, York; John Betts, Grimsby; John Miller, Pickering, (son of William Miller, of the same;) L. Harrison, Morley, St. Lawrence county, New York; Henry Talbot, Everton; Mrs. Ralph Wade, Cobourg; John E. Conse, St. Thomas; John Foote, Port Hope; James Kirkland, Indiana; George Roddick, Port Hope; M. Jones, Bowmanville; John S. Armstrong, Guelph; E. C. Scarlet, Etobicoke; Hon. John Ross, Toronto; Thomas Stock, Waterdown; N. J. McGillivray, Williamstown, Glengarry; Arthur Hetherington, London; A. Fanson, Bowmanville; H. P. Welford, Woodstock; John Walton, Peterboro; Samuel Hodgskin, Guelph; James Vine, St. Catherines; John Thomson, Whitby; Henry Jennings, Victoria Square; James Metcalf, Eglington; Arthur Hogge, Guelph; John Daw, Yorkville, were among the chief exhibitors. From the extent of this list, and the completeness with which all sections of the country were represented, the reader may easily judge of the universality and extent of the taste for short horns. The English breeders are constantly improving this stock, but it is the impression among our farmers that they fully keep pace with the English movement. Very soon, there will hardly be an unimproved animal to be found in the Upper Province, and the pure bred cattle will by constant renewals with English blood, be kept up to the highest possible standard.

### SHEEP.

The quality of sheep in Canada is also yearly renewed by importations from England. Since the last show Mr. Simon Beattie, of Markham, and Messrs. J. and M. Kirby, of Esquesing, have made additions to their flocks, the former from the stock of Mr. Thorpe and Mr. Robinson, of Yorkshire, and also of Mr. Sandys, of Nottingham, and the latter from Mr. Jardine, of Eastbourn. Great risk is encountered in these importations. Mr. Beattie had a passage of ten weeks; his fodder was nearly exhausted, he lost three animals, and his sheep, Ayrshire cattle, and a blood horse were brought to an extreme point of weakness. His animals exhibited were rather in poor condition, but the thorough-bred horse was evidently a fine one, of *Irish Bird-catcher* blood, raised by the Earl of Howth. Mr. Beattie does not think that better sheep are to be found in England than in Canada, but that it is of the greatest importance to "renew the blood." The fleece in Canada becomes rather finer, but is not so plentiful as in England. Mr. John Snell is the most enterprising breeder of pure sheep in the country, apparently, judging by the number of entries set down opposite his name. Mr. George Miller, of Markham, and Mr. Stone, of Guelph, were very little behind,

however. Mr. Snell does not at present import, but buys largely from importers. Leicesters are the favourite sheep, but Cotswolds, Southdowns, Cheviots, and Merinoes had their advocates. The last named class is coming into very general use, the attraction of 20 cents a pound more for the wool than for that of the best of other breeds being a strong one. There were many entries in this class, Messrs. Jennings, of Cooksville; Miller, of Homer; Rymal, of Ryckman's Corners; Arkland, of Oshawa; Young, of Ryckman's Corners; Row, of Glenmorris; Messenger, of Cooksville; Alfred Jeffrey, of Woodbridge; and Joseph Peers, of Woodstock, being the chief exhibitors.

### PIGS.

The stock was on the whole fine, and considerable improvement was manifest over former years.

### YORKSHIRES.

Of Yorkshire boars there was a very fine display, in which Mr. C. A. Jordison, of Belleville, figures largely. Among the other exhibitors were Messrs. Samuel H. Reeves, of Derry West; Alfred Jeffrey, of Woodbridge; J. P. Wheler, of Woburn; and James Maines, of Brampton. There was an excellent show of Yorkshire sows, the chief exhibitors being the same as of boars.

### BERKSHIRES.

The show of large Berkshires was not very large, but it was choice and good. Mr. George Morton, of the county of Leeds, exhibited a very fine boar of this breed, bred in England, and several large breeding sows of superior size and excellence. Messrs. Henry Ede, of Leskard; John Davey, of the same place; Patrick R. Wright, of Cobourg; John Gibb, of Lindsay; Alex. Gerrie, of Ancaster, and William Wilson, Islington, were among the exhibitors.

A number of other large breeds were exhibited, those of Messrs. Jonas S. Baines, of St. Thomas; P. R. Palmer, of Thurlow, and Cunningham Hastings, Bradford, being especially worthy of notice.

### SUFFOLKS.

Of these small-breed pigs there were several fine specimens exhibited, some of them being imported. Messrs. Francis Winter, of Cooksville; Henry Battell, of Grafton; Simon Shunk, of Concord; Edward Arkland, of Oshawa; Peter Lyon, of Oakville; George Savage, of Burnhamthorpe; John McGlashan, of Pelham; Thomas Mills, of Albion, and Peter Mettler, Jr., of Pelham, were exhibitors in this class.

Of other Small breeds about forty were exhibited, most of them being really fine animals. Messrs. John Malcolm, of Ancourt; James Cowan, of Galt; Thomas McCrae, of Guelph, and Samuel Cameron, of Willowdale, were the chief exhibitors.

## IMPROVED BERKSHIRES.

There were several fine Berkshire Boars and sows shown, a great improvement being evident in this department of the exhibition. The list of exhibitors embraces some of the most extensive agriculturists in the Province, and shows that in the right quarter proper attention is being bestowed upon the raising of this valuable animal. Among the exhibitors were the Hon. John Ross, of Toronto; Messrs. David Buchan and Thomas Penton, of Paris; E. W. Thomson, of Toronto; P. Rose Wright, of Cobourg; R. L. Denison, of Toronto; John Foott, of Port Hope; William D. Jarvis, of Toronto; John P. Bull, of Yorkville; Alex. Gerrie, of Ancaster, and George Morton, of Morton.

Altogether the display of pigs is up to the average, and in some breeds above it.

## POULTRY.

Many thousands derived great pleasure in examining the extensive poultry ranges, which were well filled with every variety of domestic fowl. Several pairs of white Dorkings were exhibited and attracted much attention. Those shown by Mr. Charles Nourse, of Whitby, and John Bogue, of London, were beautiful in plumage, form and size. Messrs. S. Peters, sen., of London, Adam Mathers, of Islington, and John Ker, of Drummondville, were also exhibitors.

Of spangled Dorkings there was a very nice show. Messrs. N. and J. Bethell of St. Catharines; George Miller, of Markham; F. W. Stone, of Guelph; E. W. Thomson, of Toronto; and Edward Arkland, of Oshawa, were among the exhibitors. The birds were all very fine specimens.

There was a good assortment of black Polands on exhibition, some of which were much admired. The exhibitors were the same as in the former varieties, with the addition of Messrs. Jeffrey, of Woodbridge, F. Fergusson, of South Zora, and Henry Girouard, of Hamilton. Of white Polands three handsome specimens were shown by Messrs. John Bogue, of London, and John Ker, of Drummondville. Ten golden Polands were shown, all of them very pretty fowls; and of silver Polands eight were exhibited.

There was quite a keen competition for the prize offered for game fowls, fourteen very handsome birds being exhibited, among the finest are those of Messrs. George D. James, Andrew J. Riddell, Samuel Baird, and R. L. Denison, of Toronto.

Messrs. Peters and Bogue, of London, were the only exhibitors of Jersey Blues.

Of Cochin China, Shanghais, Cantons, &c., there was but a small collection. Mr. Phillip Armstrong and Mr. John Hayden, of Toronto, exhibited some very pretty birds of these varieties.

There was rather an extensive display of

Spanish, Java Black, Bolton bays and grays, Hamburg and Dominique fowls, all of which were minutely examined and excited much admiration.

Of Bantams of both kinds—feather and smooth legged—there was a very choice display, the exhibitors being the same as in the other species of fowls.

There was a large and interesting show of Turkeys, geese and ducks, all varieties being well represented. There were also some very good collections of poultry of all kinds, for the best of which the Association annually bestows liberal premiums.

## IMPLEMENTS AND MACHINES.

This is unquestionably one of the most important departments of the Exhibition, and one that most unmistakably shows the great advancement Canada has made of late years. For a considerable time after the commencement of the Provincial Association most of the Agricultural implements and machines were importations from the States, with here and there a specimen of Canadian manufacture. This state of things became changed by degrees; the American importations gradually became smaller, till at length they nearly ceased altogether. For the last few years the material of this important department of the Exhibition has been almost exclusively Canadian; and we now find mechanics in different parts of the Province—some of them doing business on an extensive scale, having large workshops and manufactories, supplying our farmers and artisans with their requisite tools and implements quite equal in quality and durability to the best productions of the States, and on quite as easy terms. There was a large number of Ploughs of wood, iron, or mixed, constructed on different principles, to meet the varying conditions and special purposes of the art of culture. Among the principal makers are Messrs. McSherry, of St. Davids; G. Morley, Thorold; G. Gray, Stratford; W. Mahaffy, and J. Modeland, Brampton; R. Anderson, Alma; and J. W. McLaren, Lowville; all of whose productions are known and appreciated by the public. Swing, side hill, gang and double mould board ploughs, most of them of excellent material and workmanship, and evincing, more or less, the recognition of the principles of mechanics, lightness of draught combined with sufficient weight and strength, and neatness and thoroughness of work. In other implements and machines belonging to the daily routine of the farm, such as mowers and reapers, thrashers and separators, grubbers, harrows, &c., a similar improvement was discernable. The premium list will show which of these articles the judges considered the best.

Of late years steam has attracted much attention as a motive power in Agricultural operations, and it must be confessed that the investi-



gations and experiments made have been attended with a most encouraging degree of success. There were three steam engines on the grounds adapted to agricultural purposes, from Messrs. T. Zealand, Port Hope; Beckett & Co., Toronto; and Ganson & Co., Dundas. The latter has a six inch cylinder with an eleven inch stroke. The boiler is so constructed that a large heating surface is secured, and a saving of fuel thereby effected. The weight of the machine is nearly two tons, and its price \$650. These engines appear to be strongly made, and well adapted to put into operation thrashing machines, chaff and root cutters, and other implements or machines. The plough and cultivator have not, as yet, been propelled by steam in Canada, but will probably be so ere long on the larger and better cleared farms in the more advanced districts. The number of fanning mills was large, several of them evincing much skill and ingenuity in their construction. Among the makers may be mentioned Mr. Stephens, of Port Hope; whose machines have some special contrivances for the more effectual cleaning of the seed of all impurities. Mr. Harris's (Beamsville) machine for cleaning clover does its work expeditiously and effectually. Of root cutters, Mr. Doner's of Cashel, is of simple construction, and the turnip is crushed by being forced through a narrow passage, and in winter when the roots are hard the slices fall into pieces small enough for feeding sheep. Mr. Leigh, of Aurora, has a similar machine, but in order to cut the turnip into slices, it has a number of little upright knives in the cylinder, which divide the pieces just cut by the larger knife. Messrs. Maxwell and Whitelaw, of Paris, showed a machine that would cut either coarse or fine by turning different ways, so as to reduce the roots for the consumption of sheep or cattle. The same firm also exhibited a very effective straw cutter adapted to hand, horse or steam power.

We may mention that the churns were numerous and several of them evinced much ingenuity of construction. In these articles too, much improvement has been made of late years. Among the exhibitors were Mr. Kinney, of Brantford; Mr. Hummill, of Cornwall, who had a double acting churn; Mr. E. Lawson, Toronto; Mr. J. McLean, Scotland, C. W.; Dun & Jones, Huron; Mr. Thomas Head, Copetown.

There were several excellent thrashing machines on exhibition, some of them of very elaborate workmanship. Mr. J. Hall, of Oshawa, had a clover thrashing machine which thrashes out the seed directly from the straw by once going through. He also exhibited a grain thrashing machine and fanning mill combined, very elaborately got up. Mr. Jas. Milne, of Scarboro', showed an ingeniously contrived thrasher, combining, it is claimed, several improvements, price \$190, four horses can work it and thrash 300 bushels a day. The competit

ion in reapers and mowers was not great, but the specimens shown were good. Messrs. Paterson, of Belleville, had a combined machine of superior workmanship and construction. The driver without changing his seat, can elevate the cutting bar a distance of five inches, so as to mow at that or any intermediate distance from the surface. In case of stones or inequalities the cutting apparatus can be readily elevated, price \$155. Messrs. Savage, of Hamilton, exhibited a machine showing much ingenuity and some novelty, and is well thought of by practical men. Mr. Lawrence, of Palermo, has affixed to his very excellent machine a spring lever, by which he lets the finger board readily down after it has been raised. These indispensable machines are now made in the Province of equal excellence, including efficiency of action, durability and cost, with any produced by American manufacturers. Among the novelties connected with agricultural machinery may be mentioned the exhibition of a drain tile machine manufactured by Hamilton & Sons of Toronto. This is the first specimen we have seen of Canada manufacture, and judging from its appearance it promises to be an efficient production, adapted by a series of dies to tiles and pipes of different sizes. As draining is so essential to every plan of agricultural improvement on most soils it is devoutly to be hoped that this Canadian machine will in practice meet the wants of the farmers.

#### THE FOREST CULTIVATOR.

This is a new implement exhibited for the first time at the late Provincial Agricultural Exhibition. Its object is the better and more easily cultivating newly cleared land, while it is still encumbered with stumps and roots. All who have had to do with clearing land, (and which of our readers has not?) know the difficulty of getting a sufficient tilth of loose earth on the surface of the forest (when newly cleared) so as safely and evenly to bury the seed. The only implement to be depended on is the drag; this does well enough provided rain follows immediately after the grain is sown; but if a long spell of dry weather intervenes, as was the case in this Spring of 1862, the crop comes up unevenly, and at harvest there appear on the ground two crops intermingled, one ripe and the other green. Again, all farmers are well aware of the all but impossibility of getting in a second crop of grain, after the first crop. The land being virgin soil, and very rich, would of course bear several grain crops following with comparatively little injury; but the drags will not at all times pull up the old stubble, and the weeds of the previous year, and to plough with an ordinary plough is impossible. The farmer is, therefore, obliged to seed down with his first crop, and allow the land to remain in pasture until the roots are sufficiently rotten to admit the plough, and even then constant difficulties occur.

It is to meet all these cases that the Forest

Cultivator has been constructed. The shears, (three in number) all slope backwards from the frame of the Cultivator, at such an angle, that when the machine is dragged forward and strikes a root, the part of the cultivator so opposed does not check and stop, but rises over the obstruction, and is ready again to bury itself in the ground by its own weight as soon as the obstruction is passed.

Each of these shears is armed with small wings or turn furrows, which rip up the earth, sod, stubble, or what not, and throw it abroad. The machine is so arranged as for the one shear to cover the other in its passage sufficiently to make clean work and cut all before it.

The shears being three in number, and placed at nearly an equilateral triangle with each other, can scarcely all strike the same object at once, if one is out of the ground, the others are the more deeply imbedded, and so it travels on, moving and tearing up every available spot of earth, rising over roots as they occur, and if a stump is in the way the cultivator frame being like an A drag, only strikes it at an angle, and glances off.

The space covered by it is three feet in breadth, and we are assured by those who have seen it at work, that it made as good work going twice over the ground, as the drag does in five or six time, besides being more speedy than the drag, it buries the grain so deep that the even coming up of the crop is all but a certainty.

By its use the man struggling with all the difficulties of new land can realize two or three crops of grain before seeding down,—the full advantage of which fact can only be realized by the struggling improver of the forest.

The implement is made very heavy and strong as it acts mostly by its weight. To look at it it appears too heavy for a yoke of cattle, or a span of horses, but we are assured it is not found to be so in practice. In new land the obstructions are so numerous that the machine has no time to bury itself so deeply as to render it difficult to move. There are few or no shocks on the cattle or horses, and the holder has a much easier berth of it than one would suppose possible.

The machine in question was manufactured by the inventor, Mr. Cull, of this city, for his own use, and was plain and strong, and not set off by the usual amount of paint and varnish,—hence, except among practical persons, it attracted less notice than many other agricultural implements which were smarter in appearance; but the real practical farmers who have gone through the trouble of cleaning up a farm fully appreciated it, and no doubt, when such machines come to be manufactured and offered to the public, will make a liberal use of them.

One of the shears on a somewhat larger scale makes an excellent plough for the same purpose as before noted, when fixed in a suitable beam, and is well adapted for places where the full cultivator could not work.

We wish the implement a full measure of success as we do every other improvement in agricultural matters and machines. It was awarded an extra prize.

## AGRICULTURAL PRODUCTIONS,

### GRAIN, SEEDS, ROOTS, &c.

This important department of the Exhibition in point of *quantity* at least was much inferior to some previous occasions. A large number of persons having entered their articles, failed to exhibit them. This was the case to a much greater extent than was ever known before, and it occasioned considerable inconvenience to the parties having superintendence of the arrangements. It is to be hoped that some means will be devised another year to prevent, or at least greatly mitigate this evil, which occasions alike much inconvenience and unnecessary outlay. In the English national Shows exhibitors not only pay for space, but are actually fined in case they neglect to bring their cattle or articles forward, unless occasioned by some uncontrollable cause. Although it would be difficult, perhaps, to enforce so stringent a regulation at our Provincial shows, it is hoped that for the future persons entering articles will not do so without due consideration, and not allow trifling causes to prevent them being exhibited.

There were several of the samples of wheat, oats, rye, peas, buckwheat and Indian corn that clearly indicated first rate quality, and careful cultivation. The late season was in some respects, unfavorable to the pursuits of the farmer, and considering the severe drought which prevailed in Spring and early Summer throughout the western section of the Province, the quality of the cereals exhibited was better than could at one time have been anticipated.

Amongst the novelties of the grain department, we notice that the Canada Company, with their usual liberality where agricultural matters are concerned, have introduced a sample of two bushels of the celebrated "Pedigree Wheat," grown by Mr. Hallett, of Brighton, England. This is a splendid sample of Red Fall Wheat, which by repeated selection has far surpassed its original stock; indeed, if we are to believe the pictorial representation of the wheat, and there seems no ground for doubting it, the ears have attained the enormous size of eight inches and a half in length, and corresponding breadth and size. Its prolific nature is such that Mr. Hallett states in his printed description, that he has succeeded in producing a yield of over one hundred bushels per acre. The wheat only arrived from England on the 22nd inst., almost too late to give it a fair trial for this year; but still several of our first agriculturists have sown small quantities of it. The com-



pany are distributing what they have, and we hope it may next year be sown by the first week in September, and thus have a better chance than it is likely to get this season.—The price of the wheat was two guineas sterling per bushel, besides the cost of importation by express.

The Roots, whether regarded as to quantity or quality, did not come up to the ordinary standard of a Provincial Show. This no doubt arose chiefly from the unfavourable character of the season, and the somewhat earlier period of holding the show:—a week or two at this period will often produce great changes in turnips, beets, carrots, &c. Notwithstanding there were several specimens of cabbage, khol rabi, varieties of turnip and other agricultural roots, which indicated excellent quality, well grown and proportioned; and we trust next year, under more favorable circumstances, that this important department will assume its wonted dimensions and excellence. Root culture, and the proper maintenance of our now numerous breeds of improved stock, must proceed together. The potatoes were very fine, and apparently free from disease, which, however, has made its appearance, we trust but slightly,—in several localities.

#### FRUITS AND FLOWERS.

The show of fruit is not larger than in former years, but in regard to quality it is superior to anything exhibited before. There have been great improvements during the last few years in the growth of pears, peaches, nectarines and grapes, and the specimens exhibited in all these classes were magnificent. Of apples there were, of course, full store. The Niagara peninsula, lying between Lakes Erie and Ontario and the Niagara River, may be safely described as the fruit garden of Canada, and it took a very large proportion of the prizes at the Show. But other localities were not far behind. Hamilton City, protected by hills from the cold winds, is evidently favourable for the growth of fruit. Mr. John Freed, of that city, took the first prize for peaches, and Messrs. Bruce and Murray, nurserymen, took a number of prizes in grapes, nectarines and pears. Mr. H. M. Switzer, of Palermo, also took the first prize for white grapes grown in the open air. Mr. Geo. Leslie, of Toronto, took a number of prizes, and Mr. Stibbard, of Eglinton, made a good show in apples. But Mr. D. W. Beadle, of the St. Catharines nursery, a thoroughly educated horticulturist, Mr. W. H. Read, of Port Dalhousie, the great grape grower, Mr. S. J. J. Brown, H. J. Brown, and Mr. R. N. Ball, the largest growers of fruit in the township of Niagara, and Mr. Warren, and Mr. Currie also of Niagara, more than sustained the credit of

the district across the lake. Mr. Read's grapes drew all eyes. He has entered into numerous experiments in raising grapes from the seed, and in crossing the native Canadian growth with improved varieties. By joining the native to the Black Hamburg he has obtained an enormous round black grape of fair quality. He has nearly two hundred different varieties coming forward from the seed, and is sanguine of being able to obtain an open air grape which will make good wine, and be better for the table than any now grown. He has bestowed infinite care and labour on this work, and deserves the highest medal that the Provincial Association can give to him. He and the other open air grape growers agree that the Delaware is the best grape now grown in Canada. It is small, but sweet and highly flavoured, and is a large bearer. Its size may be improved by judicious culture. All the grape growers are sanguine that they will yet be able to produce a grape which will make wine of home manufacture an article of daily consumption in Canada.

Of grapes grown under glass the exhibitors are yearly increasing, and the finest specimens yet seen were at this exhibition, reflecting great credit on the skill and persevering industry of their cultivators. In open air grapes the competition was keen, and several new sorts introduced which bid fair to displace some of the older varieties, such as the Clinton, Isabella, and Catawba.

The apples were numerous and generally of excellent quality. We would suggest to the growers of the finest and best keeping sorts, the desirableness, in a bountiful year like this, of putting them carefully into barrels, and shipping them by the Montreal steamers for England, where they would be certain to command a good, and we believe, remunerating price.

The collection of Pears was large and of superior quality. Messrs. Ellwanger and Barry, of Rochester, N. Y., had some very fine specimens of this delicious fruit, as had several of our own growers, who carried off a great many of the prizes.

The season is highly favourable for ripening and bringing to a high state of perfection the Peach, and the specimens shown were superior in quality and flavour to any heretofore exhibited. The principal growers were from Niagara, St. Catharines, and Hamilton. It is a fact worth recording that some fine peaches were sent from Goderich, showing that in favourable seasons the area for growing this delicious fruit in Canada, is larger than is commonly supposed. A few good specimens of the Nectarine were on Exhibition, but this fruit does not appear to be in general well adapted to the climate of Canada. Perhaps a better knowledge of its habits and more

careful attention to culture would render it more successful.

In vegetables the general display was very good, and comes up fully to former years. Cauliflowers were both large, and fine in quality. Cabbage not quite so large as in more favorable seasons. Tomatoes, Capsicums, onions and turnips were good, and shown by producers from various parts of the country. The show of squashes was extensive, some of the specimens being too large for table use. The celery was excellent.

The display of Green-house plants was, perhaps, superior to any former occasion, and attracted general attention. In Dahlias, the show of this favourite flower was not very fine, the season not being favorable. In Fuschias also the display was limited; the season being too far advanced to exhibit them in perfection.—There was an excellent assortment of Annuals in bloom, with quite a number of new varieties. Verbenas, beautiful and indispensable bedding out plants, were very fine and exceedingly well grown. The Bouquets were tasteful, the flowers artistically arranged, and the competition keen. It is to be regretted that no really good specimens of rustic ornamental work were shown, and we recommend some of our professional gardeners to try their taste and skill in this way, and produce a piece of work that would be both useful and ornamental to the garden.

#### ARTS AND MANUFACTURES.

The Exhibition Building was, as is usual on these occasions, filled to repletion with articles of the various kinds of manufactures, while the eastern galleries were mostly occupied with ladies' work, paintings, and musical instruments. The west wing comprised a large assortment of beautiful green-house plants, and a very splendid collection of fruit,—the apples, pears, plums, peaches and grapes added much to the variety and richness of the vast collection of varied articles which this capacious building contained. Throughout the Show the "Crystal Palace," as the Exhibition building is commonly termed, was the great centre of attraction to classes of people, and was thronged throughout.

In Sewing Machines much progress has of late been made, there being several different kinds on exhibition, manufactured in the Province. A very few years since everything of this kind was imported, Mr. Soper, of Woodstock, had an improved Singer Machine particularly adapted to heavy work. The price varies from \$75 to \$85, according to size. Mr. Soper has recently sent one of his machines to England. Mr. Halligan, of Newmarket, exhibited a machine possessing some novelties in construction, and it is said does

its work well:—one principal peculiarity is a double stitch for waxed thread. Messrs. Wanzer & Co., Hamilton, exhibited quite a number of machines of different constructions, the produce of their own well-known manufactory. Their combination family Sewing machine is well known and appreciated, simple in its construction, does not easily get out of order, and is easily worked. Messrs. Patterson & Irwin had some beautifully made Singer's machines, possessing some recent improvement of the shuttle. For this machine there is a constantly increasing demand.

Mr. Walton exhibited specimens of roofing Slate from Lower Canada, of excellent quality and color; the latter is said to be permanent. Some beautiful white marble mantle-pieces of superior design and workmanship were shown by Mr. Steiner, and Mr. W. H. Sheppard of Toronto; also a number of tomb stones in marble, having groups of well executed figures, by Mr. Armitage, and Messrs. Borrowman & Pearce, of the same place.

In Lamps and illuminating fluids there was an extensive and highly creditable display. Messrs. Parsons, of Toronto had a fine collection, consisting of rock oil, lubricating oil, and benzine, the latter being a product of petroleum, an article for which there is an increasing demand in England at improving prices. The newly formed refining company of Enniskillen had a number of specimens of crude petroleum and its various products. Mr. Hugh Miller, of Toronto, exhibited different specimens of oils, and an "Illuminator," which is said will burn without a chimney, and to consume products hitherto regarded as almost worthless. Mr. Esmonde showed a sample of lubricating oil, made entirely from petroleum, and sold at the extraordinary low price of 25 cents a gallon; and it is consequently getting into great demand. Mr. Pomeroy, of Toronto, had an extensive assortment of animal oils of superior quality. And H. Piper & Brother had a fine display of coal oil lamps, and several excellent specimens of workmanship in tin and copper.

The village of Gananoque, on the St. Lawrence, continues to increase in manufactures of iron and steel, as was evinced by its numerous productions at the Exhibition. Mr. Jones has heretofore been an extensive exhibitor in spades, shovels, hoes, forks, and such like articles, of very superior workmanship, the absence of which was felt as a loss on this occasion. Mr. Briggs had a quantity of handsome steel carriage springs, and an assortment or pumps. Messrs. Cowan and Britton showed numerous samples of nails of all kinds in common use, and a specimen of pressed nails, for which they obtained a patent. Messrs. Warner & Britton had some well made specimens of articles in tin, Britn



tannia Metal and Alberta spoons; and Mr. Bullock exhibited a coffee mill, and numerous other articles in metal. Mr. Hart had a complete assortment of files, and Mr. Robinson an excellent collection of scythes, axes and other edge tools. Mr. Brown's lock, (of Toronto) is a curious piece of workmanship, and apparently impracticable to pick.

In the important department of Harness the show was larger than usual, and the workmanship and quality of the articles generally betokened an increasing improvement. Mr. Stewart, of Toronto, an old and successful Exhibitor, had an extensive assortment both of heavy and light harness, saddles of various patterns, and ladies quilted Somersets. Mr. Hinder, of King Street, Exhibited good specimens of ladies' quilted and gentlemen's shafted saddles, as did Mr. Thompson, Mr. McGivern of Hamilton, all of excellent workmanship. Mr. R. Nicholls, of Toronto, exhibited various styles of horse collars, a department to which he devotes special attention. Mr. Porter, from Bowmanville, Mr. John Scott, of Caledon East, Mr. Jackson, of Peel, had also some specimens of harness, well made and adapted to the wants of the country. Mr. Clarke, of Toronto, showed a fine collection of trunks, valises, travelling bags, &c., which attracted much attention. Of boots and shoes there was a large display both from makers in Toronto, and various parts of the country, much of which indicated neatness, strength and skill. In leather the entries were numerous, and the specimens exhibited of the various kinds clearly indicated steady improvement in this important branch of domestic manufacture. Among the exhibitors may be mentioned Mr. McGlashan, of Toronto, Messrs. Pointer, of Churchville, Mr. Figgs and Mr. Bate, of Toronto Township, all of whom had specimens of various kinds of leather of first rate quality. Mr. Maclean, of Chippawa, and Messrs. Cook & Co., of Yorkville, also contributed liberally to this department.

Messrs. McCausland & Howard, of Toronto, made a very creditable display of Stained Glass; comprising specimens of English decorated of the fifteenth century, and others adapted to the dwellings of modern times. The specimens exhibited were generally meritorious both in design and execution.

Rice Lewis & Son exhibited some heavy belting with circular and other saws, of the value of \$3,000. They were manufactured by Messrs. Morland, Watson, & Co; the belting is also from Montreal, being manufactured by the British American Rubber Company.

Messrs. Irvine & Jones, of Uxbridge, showed some large steel Amalgam Bells, possessing strength and distinctness of tone; three hundred of these bells have been made and sold within the last 18 months. Mr. Bain, of Sand-

wich, had specimens of a cemetery fence and posts of cast-iron, his own invention and casting. A singular feature of this article is that the chain is cast in one piece. Price \$1 50 per foot of the fence, including the posts.

Messrs. J. & J. Taylor showed quite a number of thier well known Patent Fire and Burglar Proof Safes, of an improved style and excellent workmanship. These articles have for some years enjoyed a large share of public confidence and favor.

A large number of stoves of various patterns and uses were exhibited by Messrs. J. G. Beard & Sons, and Mr. J. McGee, both of Toronto. Great improvement has of late years been made in the manufacture of these articles, and large quantities are annually made in different parts of Canada.

Mr. D. S. Keith, Toronto, exhibited several articles of interest. His "Self-regulating, low pressure, steam warming apparatus," seems well adapted to private dwellings, as it requires comparatively little attention. Mr. Keith also exhibited Gas Works, for making gas from petroleum, wood, resin, &c.; the process is simple, and the apparatus but little liable to become deranged. His Green-house Boiler seems to be both economical and effective.

Mr. Bullock, of Toronto, showed some very good specimens of stained glass, including a figure of St. Peter, and a variety of interesting Gothic work, specially adapted to windows for churches; also some embossed white work for private dwellings, and a number of pen and ink figures for stained glass. This establishment has turned out some superior productions, both for domestic use and church ornamentation, the coloring of the glass being bright and permanent, and the designs generally correct and graceful.

#### CABINET-WARE.

In the furniture department this year, there was no competition. Messrs. Jacques & Hay walked the course unopposed, and carried off all the prizes for furniture offered by the Association. The articles they exhibited, even if there had been competition, would have been exceedingly hard to beat, being of a quality and finish equal, if not superior to any thing of the kind we have seen at any previous show. Their set of bedroom furniture, which obtained a first prize; was of polished black walnut, the material of which it was made, and the heavy carved work upon it, giving it a rich and massive appearance. The foot-board of the bedstead had as a centre-piece a view of the St. Lawrence and the Victoria Bridge very well carved. The head and foot-boards were veneered on both sides, and presented beautiful polished surfaces. The dressing glass stand was also a handsome piece of furniture. Each pedestal contained a set of

shelves of polished curly maple. The doors of the pedestals were polished inside and out. Behind the glass was some neatly executed fret-work. A black walnut wardrobe accompanied the set, but had awarded to it a separate first prize. It was lined inside with polished maple, the shelving being of the same material, which makes a very effective contrast with black walnut in articles of furniture of this kind. The trusses and cornices were elaborately carved. This wardrobe it was stated, has been sold for \$350, and is to be sent to England. Another set of bed-room furniture, shown by Messrs. Jacques & Hay, got a second prize. This was of a much cheaper style, made of white wood (a species of poplar), and comprised a bedstead, bureau, and glass, an enclosed marble-top washstand, an oval table, chairs, and a wardrobe—the value of the whole, including the wardrobe being \$110. The wardrobe also obtained a second prize. Like the other articles, it was of white wood, and imitation ebony beading and moulding. Messrs. J. & H. showed another bedroom set, got up as a sample of simplicity and cheapness. It was of white wood, and comprised a bedstead, dressing bureau, wash stand, table, and chairs, the price of the whole being \$21. Their set of drawing room furniture was very handsome. It comprised a sofa, a gentleman's easy chair, a lady's easy chair, a devotional and other chairs, and a centre table. The cushioned part of the sofa and chairs were covered with rich crimson and gold brocade, and the carving on the wood work was of the first style of excellence. A first prize was awarded for the drawing-room set, another for the sofa, and another for the centre table, which was of black walnut, neatly covered. The selling price of the centre table was said to be \$80. They showed also some dining-room chairs, covered like the drawing-room set with crimson and gold brocade. They also sent in, but at too late a period to be entered for a prize, a lady's dressing chair, an ottoman, and some other articles. They obtained the first prize for the best specimen of turned work, the article they exhibited being a lady's work table of bird eye maple. Specimens of turning sent in by Messrs. Smith & Burke, of this city, got the second prize. Among the goods exhibited by Messrs. Jacques & Hay, we observed also a handsome inlaid chess table, made of twelve different kinds of wood, walnut, curly maple, cherry, oak, basswood, &c. The white squares were of hickory, and the dark of walnut.

Messrs. Smith & Burke of this city, exhibited some capital specimens of joiner's work, and machine wrought moulding and flooring, for both of which they carried off first prizes.

Collections of veneers from Canadian woods were shown by W. Clements, Mewbury, C. F. Rose, Dawn Mills, and J. F. Purdy & Co., Newbury. Some very fine pieces were shown by Mr. Clements. They were all in an unpolished

state and comprised veneers of maple, birdeye oak, curly, and birdeye maple, &c. Mr. Clements got the first prize, and he also shared a portion of the honour of the prize for the best bed-room furniture, having supplied Messrs. Jacques & Hay with the veneers for it. The specimens shown by Mr. Rose were polished, and had awarded to them the second prize.

### FACTORY MADE WOOLLEN CLOTHS.

The show this year of woollen cloths of Canadian manufacture, exceeded in amount, in the number of competitors, and in the quality of the goods shown, what has been witnessed at any previous Provincial Exhibition.

The Port Dover Woollen Factory is added to the number of competitors this year. It commenced operations last spring. The Joint Stock Company formed to establish it put \$12,000 worth of machinery into the building, and then rented it to Mr. J. N. Pitts. Judging from the quality of the material shown, we would say they could not have placed it in better hands. Mr. Pitt constantly employs forty hands and turns out about 300 yards of goods per day. The tweeds shown at the fair by his agent, Mr. M. C. Nickerson, could not easily be surpassed, and other styles were also very good. Mr. Pitts obtained a first prize for the best piece of winter tweed shown; the second prize for summer tweeds; the second prize for fulled cloths; and a first prize for the best assortment of woollen cloths, tweeds, &c. The assortment comprised thirty-five pieces. It is exceedingly creditable to the Port Dover Company, that at the very first show at which they had an opportunity of competing they carried off so many honourable distinctions. Mr. Nickerson claims that the goods sold by this company at the same rate as English goods of a similar grade, are of 25 per cent. better quality; the English goods, he says, being to a greater or less extent filled in or backed with "shoddy," while the Canadian articles are entirely of the genuine wool.

The Ontario Woollen Mills of Cobourg (Messrs. Fraser & Co.) continue to maintain their well-earned reputation, and sent some very fine samples of their manufacture. Messrs. Fraser & Co. got a first prize for the best piece of broad cloth of Canadian manufacture; a first prize for the best piece of fulled cloth; and a second prize for winter tweeds. They showed also some capital factory-made shawls, which would no doubt have got a prize, had any been offered for that description of goods. The Ontario Mills continue to do a large business. They keep about 100 men constantly employed, and make from 800 to 900 yards of cloth per day.

W. Barber & Brothers, of Georgetown, make an excellent display in the same department. They got the first prize for summer tweeds; a second prize for mixed satinet; an extra prize



for doeskins; an extra prize for a sample of Oxford grey; and an extra prize for black cassimere from merino wool. The Messrs. Barber showed some very fine flannels. They got both the first and second prize for red flannels, and the first prize for white flannel. They employ constantly in their woollen factory from 80 to 100 men.

Disher & Haight, of St. Catharines, sent a good assortment of woollen cloths, flannels, &c. In satinets they had the pre-eminence over all competitors, receiving the first prize for black satinets, and the first prize for mixed satinets.

Messrs. B. & W. Rosamond, of the Victoria Woollen Mills, Almonte, showed some excellent samples, and were awarded the second of the prizes for the best assortments of woollen cloths, tweeds, &c.

Platt Hinman, of Grafton, was also an exhibitor in this department, and carried the second prize for broad cloths.

Ezekiel Snyder, Brockville, showed a variety of blankets, woollen carpets, &c., and obtained several prizes.

#### MISCELLANEOUS.

Messrs. Booth & Brother, of Yonge street, Toronto, showed the best assortments both of copper ware and tinsmiths' work, and obtained the first prize in each department. Their assortment included some handsome block tin ware, a style of goods never before manufactured in Canada.

Two very complete maps of Canada, Tremaine's and Tackabury's, which have been recently published, excited a good deal of interest, and the Judges awarded to each an extra prize. Messrs. Chewett & Co. exhibited several county maps, which they have lithographed, and their school map of British North America, prepared under the supervision of the Educational Department of Upper Canada.

Messrs. Barber & Bothers, of Streetsville, and Messrs. Buntin Brothers, of Toronto, were the only exhibitors of paper for printing, writing, &c. Very creditable samples were shown by both firms. The first prize was awarded to the Messrs. Barber, and the second to the Messrs. Buntin. The Messrs. Barber also sent specimens of their decorated and satin gilt paper hangings, which they manufacture of a superior quality.

We have already noticed the collection of native plants, for which a first prize was awarded to Dr. Poole of Norwood. A very full and carefully prepared botanical collection was also shown by Miss. Kate Crooks, of Hamilton, and obtained the second prize. A book of Canadian ferns and leaves, prepared by Mr. Dredge, Toronto, was commended by the Judges.

An extra prize was awarded to Mr. Thomas

Hill, Toronto, for his paper-cloth address labels. Being at once strong, flexible, and capable of being easily written upon, they seem to serve admirably the purpose for which they are designed.

John Cook, Toronto, showed some very pretty sheepskin mats, the wool of which was of silky fineness and very delicately tinted. He exhibited also an assortment of gloves and mits. Mr. Cook received an extra prize for his mats.

The show of furs was unusually scanty. There was no competition worth naming. The cap and gloves, and sleigh robe, for which Mr. Henry Ferdinand, of Waterloo, received first prizes, were of otter, and were fair enough specimens.

John Gartshere & Co., of Dundas, were large exhibitors, and received as they deserved, a considerable number of prizes. Among other articles which they showed were a 40 horse power engine, a locomotive driving-wheel, a locomotive casting, a centre discharge water-wheel, a treble suction smut machine, a pair of millstones, a patent bran duster, a locomotive boiler, and a grain separator.

Messrs. Miles Welsh, of Paris, and H. Augustine, of Orwell, exhibited one of Brickley's self-acting hand looms, patented in 1859. The loom shown had some new improvements, for which a fresh patent has just been asked. It works easily by turning a crank, and was kept frequently in motion during the show. An extra prize was awarded for it.

Some useful machines were sent from the Novelty Iron Works, Dundas, including their cracker and biscuit maker, their sugar crushing mill, and their improved grocer's coffee mill, for all of which prizes were awarded.

Messrs. Alcock, Laight & Co., of this city, exhibited a large and complete assortment of imported fish hooks, fishing tackle, needles, &c., which received one of the prizes given for foreign manufactures.

Messrs. J. G. Joseph & Co., Toronto, exhibited some most beautifully executed silversmiths work, for which they obtained the first prize. Their goldsmiths' work also, was very superior.

Mr. Thomas Herrick, of Toronto, exhibited an interesting collection of minerals from the neighbourhood of Fort William, on Lake Superior. They included some beautiful coloured crystals, of amethystic quartz, and a variety of specimens of iron, lead and copper ores. A first prize was awarded to Mr. Herrick's collection. The second prize for Canadian minerals was awarded to Mr. W. W. Fox, of Toronto, who showed a very good collection of copper ores from the eastern townships, iron ore from the St. Maurice, and other minerals.

Mr. Haughey showed a Roman Ionic capital and other specimens of Canadian marble, which excited a good deal of interest.

## Visit of His Excellency the Governor General.

On Wednesday afternoon, at 2 o'clock, His Excellency, accompanied by Lady Monck and family, Lord Mulgrave, Governor of Nova Scotia, Lady Mulgrave, with several gentlemen of his Excellency's suite, and the officers of the Association, assembled on a platform erected for the purpose at the east end of the Mechanics' Hall. The Vice Royal party were enthusiastically cheered as they entered the grounds, the Cobourg Band playing in excellent style the National Anthem, when after the cheers had subsided, F. W. Stone, Esq., the President of the Association, read the following Address and presented it to his Excellency:—

TO HIS EXCELLENCY THE RIGHT HONOURABLE  
CHARLES STANLEY VISCOUNT MONCK, GOVERNOR GENERAL OF BRITISH NORTH AMERICA,  
&c., &c., &c.

MAY IT PLEASE YOUR EXCELLENCY:—We the Farmers, Manufacturers, and Artisans, constituting the Agricultural Association of Upper Canada, beg to tender to your Excellency a cordial welcome to the display of the results of our industry on this occasion of our Annual Exhibition, and of your Excellency's first visit to Western Canada.

A beneficent Providence has blessed our labors with a larger increase than could have been anticipated at an earlier period. The season, in some respects, has not been favorable to the pursuits of the Husbandman; still we trust that your Excellency in visiting the various Departments of the Exhibition, will be enabled to form a correct estimate of the industrial condition, social welfare, and great capabilities of this rapidly improving Province.

From the interest which your Excellency is known to have taken in promoting these important pursuits in the Mother Country, we fondly hope that they will continue to receive here your Excellency's fostering care, and that Canada, during your Excellency's administration, will continue to advance in all that is necessary to the growth and prosperity of a free, united, and happy people.

While we deeply deplore the civil strife that is now raging in the great adjoining Republic, and continue to feel the strongest desire to maintain friendly relations, and a generous rivalry in those pursuits which tend to civilise and bless mankind, yet, should our peaceful shores unhappily become threatened with invasion, we shall not, we trust, be found wanting as a united and loyal people in bearing our portion of the burthens and dangers incidental to a vigorous defence.

We trust that your Excellency, Lady Monck and family, will enjoy your visit to this section of the Province, and that the evidences which your Excellency cannot fail to witness of its

material prosperity, social contentment, and genuine British feeling, will unmistakably indicate an unswerving fidelity to the Crown, and the integrity of the Empire.

## HIS EXCELLENCY'S REPLY.

TO THE AGRICULTURAL ASSOCIATION OF UPPER CANADA.

GENTLEMEN,

I heartily acknowledge your kindness in welcoming me, as you have done, to Toronto.

I rejoice with you at the favourable result of the present harvest, and I look forward with much interest to the opportunity that will be afforded me of closely inspecting the contents of the Exhibition.

I observe with pleasure that farmers, manufacturers, and Artisans are all joined together in your Association. The interests of these several branches of industry have often been represented as different, but you, Gentlemen, know that such is not the case, and that the prosperity of each contributes to the well-being of all.

This part of the Province is pre-eminently adapted for agriculture. The wheat grown here is some of the finest in the world, and I was much struck with the well cultivated and clean looking farms in every part of the country between this and London. I also saw a considerable quantity of well-bred stock, and excellent horses. On the whole I am much pleased with what I have noticed of the farming in Western Canada, and having, as you have observed with truth, been something of a practical farmer myself, I think that perhaps you may be glad to hear the favourable opinion I have formed of it.

Toronto, Sept. 24th, 1862.

Several hearty cheers were given by the large concourse of people surrounding the stand, after which the Vice Royal party, accompanied by the Officers of the Association, proceeded to view the various departments of the Exhibition.

## THE DINNER.

The dinner to His Excellency was given in the afternoon of Wednesday, in a tent erected in the beautiful grounds of the Lunatic Asylum. Upwards of 500 gentlemen were present at the entertainment. His Excellency arrived from the Exhibition grounds shortly before three o'clock. When he entered the tent, accompanied by His Worship the Mayor, the President of the Agricultural Association, and other gentlemen, he was received with enthusiastic and prolonged cheering. His Excellency and other distinguished guests sat at a cross table on an elevated dais erected at the north side of the tent, and the rest of the company at four long tables stretching from it.

His Worship, Mayor Bowes, occupied the chair, having on his right the Governor General,



Lord Monck; Hon. J. S. McDonald, Attorney General West; — Atkin, Esq.; Col. Gordon, of the 17th Regt.; Hon. G. Alexander, M.L.C.; Hon. T. D. McGee; Col. R. L. Denison; Capt. Retallack; Chief Justice McLean; Chief Justice Draper, and Chancellor Vankoughnet. On his left were Earl Mulgrave, Lieutenant Governor of Nova Scotia; Major General Lord Frederick Paulet; Hon. Mr. Wingfield, of the Life Guards; F. W. Stone, President of the Agricultural Association; Major General Napier; Rev. Dr. McCaul; Col. E. W. Thomson; Col. Irvine; Hon. David Christie, M.L.C.; Denis Godley, Esq., Col. G. T. Denison; Hon. M. H. Foley; Hon. John Ross, and Hon. J. B. Robinson.

There were also present among the general company, Hon. W. H. Howland, M.P.P.; Hon. Wm. McDougall, M.P.P.; Hon. O. Mowat, M.P.P.; Hon. G. W. Allan, M.L.C.; Hon. J. H. Cameron, M.P.P.; Angus Morrison, M.P.P.; H. Munro, M.P.P.; W. Patrick, M.P.P.; A. McKellar, M.P.P.; T. M. Daly, M.P.P.; John Crawford, M.P.P.; Dr. Connor, M.P.P.; Amos Wright, M.P.P.; T. C. Street, M.P.P.; M. C. Cameron, M.P.P.; Hon. Henry Ruttan, Hon. W. Cayley, Hon. Robert Spence, Bishop Strachan, Rev. S. Givens, Dr. Workman, Dr. Reid, of the 30th Regt., Alexander Manning, G. P. Ridout, Lewis Moffatt, W. Ferguson, Ex-President of the Agricultural Association, Recorder Duggan, Rev. Dr. Barclay, Dr. Small, Rev. Dr. Ryerson, G. A. Barber, S. Fleming, Rev. Mr. Marling, W. H. Boulton, Hugh Miller, Professor Hirschfelder, Professor Hind, Dr. Agnew, Coroner Duggan, T. Hodgins, J. G. Hodgins, Thomas Reynolds, F. W. Cumberland, Dr. Beattie, of Cobourg, George Boomer, Police Magistrate, David Buchan, R. A. Harrison, Rev. Dr. Green, Rev. Mr. Williams, of the 30th Regt., Dr. King, of Columbia College, New York, O. R. Gowan, James Cotton, F. C. Capreol, W. Clay, Major Gray, of Hamilton, T. D. Harris, J. D. Ridout, John Duggan, S. Phillips Day, of the London (England) *Morning Herald*, J. S. Denis, H. Rowsell, Aldermen Sterling, Jarvis, Carr, Hynes, Sproat, Brunel, Dunn, Godson; Councilmen Edwards, Love, Boxall, T. Smith, Spottiswood, Bell, Higgins, Reid, &c. &c.

The celebrated Cobourg Brass Band was in attendance in a small tent behind the Mayor's table, and supplied some excellent music as the toasts were successively given.

The Mayor said it was unnecessary for him to preface the first toast with any remarks. He begged to propose—"The Queen—God bless her."

The Toast was drunk with all the usual manifestations of loyal enthusiasm.

The Mayor next gave the "Prince of Wales and the rest of the Royal Family." (Cheers.)

The Mayor then said—My lords and gentlemen, I come now to the principal toast on this occasion, one which I know will be happily responded to by every one present. (Cheers.)

The representative of Royalty now with us is a link binding us with Great Britain, and I trust we shall long continue to have in Canada a representative of the British Crown. But we can boast of a still stronger tie in that loyalty which has ever characterized the Canadian people—(Cheers)—a loyalty fostered and deepened by the liberty which we enjoy. This country has prospered under British rule. I need only point to the Exhibition now being held in this city, as sufficient to prove to his Excellency the progress this country is making in agriculture and manufactures. We have had a temporary injury—I hope it is only temporary—done to our trade and commerce by the troubles now occurring in the United States,—troubles in which we have taken no part, but which have exerted upon us an important influence. I trust it is the desire of every gentleman present, and the prayer of every Canadian, that these troubles may be speedily and satisfactorily settled—(cheers)—and that the good feeling which now happily exists between this country and the United States may ever continue. (Cheers.) I see nothing at present likely to disturb that good feeling, but should Great Britain, for the maintenance of her national honour, be ever forced to go to war with the United States, I trust, and I am sure I may say it with confidence, that there will not be a disloyal man in Canada. (Cheers.) I am quite sure that there is no foundation whatever for the idea which has got abroad in England, and which has even found expression in the British Parliament, that the people of this country would desire that Great Britain should fight her battles alone on this continent. Cries of No! No!) I am confident that I speak the sentiments of every one present, and of every man in Canada, when I say that we will be ready to make every possible sacrifice, both of men and money, to maintain in this country British honour and British connection. (Cheers.) to have at their head a nobleman, who, as your lordship does, possesses the confidence of the whole people of this country. (Cheers.) I give you the health of Lord Monck, the Governor General of the Provinces.

His Excellency's health was drunk with great enthusiasm, the cheers being given right lustily, and being again and again repeated.

His Excellency, on rising, was greeted with renewed cheers. He said,—Mr. Mayor and gentlemen, I thank you most heartily and unaffectedly, not only for the reception which my name has met amongst you, but for your having given me this opportunity of meeting with the bone and sinew of Western Canada. (Cheers.) I can scarcely conceive any meeting more interesting than that between the representative of the Sovereign of this great Empire, and the men who have conquered so magnificent a tract from nature to add to her dominions. (Cheers.) I have also to congratulate myself on the circum-

stance that my visit has been made at the time of your Provincial Exhibition. I have gone through that Exhibition with great care to-day, and I may say with some little knowledge of the articles exhibited, for at home I am myself a practical farmer. (Cheers.) And I say it, gentlemen, not in any way with the view of flattering you, but I say it as the simple truth, which has commended itself also to the judgment of some of my friends about me, who have witnessed the exhibitions of the Royal Society of England, that if your exhibition on these grounds to-day were laid alongside of theirs, there would be very little to choose between them. (Cheers.) I cannot but think that this is a subject of congratulation for this portion of the Province of Canada. Your country now, and for years to come, must be mainly an agricultural country, and you cannot over-estimate the importance or the value to you of bringing here so good stock to start with in the race of farming competition. (Hear, hear.) I have, within the last few months, had an opportunity of traversing the greater part of this Province, certainly in rather a hasty and desultory manner, but I have everywhere been met by exhibitions and demonstrations of loyalty to the throne, and of personal kindness to myself, culminating in this magnificent demonstration at Toronto. And I cannot help feeling the deepest gratitude on personal grounds, and the greatest satisfaction on public grounds, at the way in which I have been received. (Cheers.) Gentlemen, this is not the compelled adulation of a servile population to the satrap of a despotic monarch; it is the unpurchaseable, spontaneous, and reasonable outpouring on the part of a free people of their sentiments of affection to their sovereign, their attachment to the throne, and their stern determination to maintain unbroken the unity of her glorious empire. (Great cheering.) I never entertained a doubt of the loyal feelings of the people of Canada—(hear, hear,)—and I believe that, if the occasion should unfortunately arise for the practical exhibition of those feelings, not a man in Canada would be wanting in his place, when that occasion arose. (Cheers.) Gentlemen, I am in a position to state to you, that not only I myself, but those who are responsible to the people of this country for the government of the country, have at heart the question of preparation for national defence as strongly as have any men at home. I trust that in a few days a system will be promulgated to you, which will enable the people of this country, in a manner inexpensive to themselves, and little onerous in regard to their industrial avocations, to put themselves in such a position of self-defence as will ensure them against aggressive attack. (Cheers.) I beg to thank you for the kindness with which I have been uniformly received in my progress through Canada, and I beg not only to thank you but to congratulate you on the loyal feelings by which you are animated.

I trust that I may be enabled, during the period it shall please my Sovereign to allow me to remain in my present position, to exert some influence in developing the resources of your country; and I trust that I may hand you over to whoever succeeds me in position, largely improved in material progress, and with your loyalty and affection to the British Empire un tarnished and undiminished. (Great cheering.)

The Mayor said—The next toast on my list requires very little introduction from me, but I claim for it as warm and hearty a response as has been given to those that have preceded it. From the effect produced by the troubles in the United States on the trade and commerce of Canada, we are led to infer the advantage to a country from being in friendly connection with those adjoining it, not only when those countries are governed by the same laws and subject to the same sovereign, glorying in the liberty which is the heritage of British subjects, but even when they are not governed by the same laws. Even in that case, when contiguous, they exercise an important influence, one upon another, and the results are most unfortunate when any difficulty arises between them. The sister provinces are separated from us by ice-bound waters for half the year; yet we acknowledge the ties by which we are bound. We glory indeed to acknowledge those ties, and I would wish to say to Lord Mulgrave, whose health I am about to propose, that we offer him a cordial and hearty welcome to Upper Canada. (Cheers.) And I may say—although I am not going to give an opinion upon the subject now under discussion, that of the Intercolonial Railroad—that I trust, if it is carried out by the gentlemen who have it in charge, that it will connect with us commercially the maritime Provinces, and ultimately lead, I hope, to the extension of communications with the Northwest Territory, pouring into the lap of Canada the trade of that region which is now diverted to fill the coffers of a foreign country. It was said on one occasion by Lord Elgin, in connection with this Intercolonial Railroad scheme, that the citizens of Toronto, in a very few years, would be able to breakfast on fresh fish from the Atlantic and Pacific. I trust the time is fast approaching when that prediction will be accomplished. (Laughter and cheers.)

Earl Mulgrave, who, on rising, was greeted with renewed cheering, said—Mr. Mayor, Lord Monck, and gentlemen, I take the manner in which you have responded to the toast which you have just drunk, as an earnest of the brotherly affection and regard which exist between Canada and the Lower Provinces. (Cheers.) This regard, and this affection, I can assure you are fully reciprocated by the Province over which I have the honour to preside. (Cheers.) Unfortunately at the present moment we are separated by distance and difficulty of communication, preventing that cordial and easy inter-



communication between the colonies, which is so desirable for all of us. This distance and this difficulty of communication, I trust most sincerely, may soon be overcome. Once united by an iron band, we shall be able to communicate with one another, and to interchange our articles of commerce, and nothing I believe is more likely to add to the happiness, advancement, and prosperity of all her Majesty's dominions on this side of the Atlantic, than our being thoroughly united and in easy communication with one another. In this Province you have many advantages which we do not possess in the Lower Provinces. You have a climate as good as any, I believe, in the world. You have a soil rich, fertile, and almost virgin. You have conquered the soil from the wilderness in a manner which does infinite credit to the hardy sons of Canada. And I trust that, when the communications are made intimate between us, the Lower Provinces may learn many things from Canada. And I trust that Canada may learn something also from the Lower Provinces. (Cheers.) We have our advantages as well as you have yours. We have a mineral wealth in Nova Scotia which I believe is almost unequalled in the world. Coal we have in abundance, and within the last 18 months we have found the precious metal which all so anxiously seek after. (Hear, hear.) This discovery has not, as yet, been fully developed, but I doubt not, that ultimately Nova Scotia will become a gold producing Province. That this will add to her wealth and prosperity no one can doubt, and I trust that whatever prosperity she may enjoy, Canada, by a closer connection with her, may be enabled to participate in that prosperity. (Cheers.)

The Mayor said—The next toast is "The Army and Navy." (Cheers.) It is almost unnecessary for me to preface this toast by a single remark. The bravery of the British Army on many a well-fought battle-field is known to every one present. The gallantry of the navy is quite equal to that of the army, and it would be useless for me to add another word in recommendation of the toast I now give you—"The Army and Navy of Great Britain." (Cheers.)

Major General Napier, on rising to respond, was warmly cheered. He said—Mr. Mayor, my Lords and gentlemen, I assure you that I have great pleasure in rising in the name of the army to return thanks for the very kind way in which you, Mr. Mayor, have proposed our health, and the very flattering manner in which you, gentlemen, have responded to it. We soldiers always appreciate, and are always glad to receive the approbation of our fellow-citizens. (Cheers.) It would ill become me as a soldier to say much of the army. I think I may safely leave their deeds to speak for themselves, but this I can say, and this I will say, that whenever, and wherever the services of the British army may be required, I feel

sure that you will find we shall do our duty. (Cheers.) I wish also to take this opportunity of expressing my admiration of the way the volunteers of Toronto have turned out. I know—and no one knows it better—the difficulty the volunteers have in getting drill, and I must say that I was very much astonished at the perfect manner in which they went through the *manœuvres* yesterday.—(Cheers.) And I trust, from what has dropped this afternoon from the Governor General, that the very next time I have the honor of having the volunteers under my command, I shall have as many thousands as I had hundreds yesterday. (Cheers.)

Capt. Rubidge, R. N., of Peterboro', C. W., returned thanks on behalf of the British navy, and remarked that, whenever their services were required, their motto was "Ready, aye ready." (Cheers.)

Lord Monck again rose and said—With the permission of our Chairman, I beg to propose a toast. As the subject of that toast is much better known to every one of you than he is to me, I conceive it would be impertinence on my part to intrude upon you any observations in reference to it. I beg to give you the health of our worthy chairman, the Mayor of Toronto. (Loud cheers.)

The Mayor said—I deeply feel the unexpected honour done me by the Governor General in proposing my health, and the very cordial manner in which it has been received by this very influential assemblage, representing as it does every interest of this great country. I am sensible of my inability to do justice to the city I have the honour of representing here, a city that in all circumstances, even the most trying, has always proved her loyalty to the Queen and to the constitution. (Cheers.) The city of Toronto like other Municipalities, has suffered in trade, and in the reduction in the value of property, caused in a great measure by the alienation of the provincial credit and capital to the construction of public works in the country, works rendered necessary by the withdrawal from Canada of the protection she enjoyed from Great Britain up to 1846. In that year, the British Parliament, in the interest of the working classes of Great Britain, adopted a policy which compelled Upper Canada to compete in the English markets with the wheat-growing countries of the world. We could have no fault to find with this, but the Legislature and the people of this country were obliged, on account of the free trade policy of Great Britain, to pledge the credit and the capital of the country for the construction of railways to give to the farmers of Upper Canada easy and cheap access to the British market. The municipalities of the country, seconding the Government of the country, pledged their credit also for the construction of those railways. The city of Toronto went largely into the encouragement

of railways, in order to open up this country, and to bring to the door of every farmer a suitable market. Toronto also expended a large amount of money in order to give the Grand Trunk Railway an opportunity of uniting its Western and Eastern section opposite the city. Some of the politicians of the country—and I may be permitted to make this remark, although politics are excluded on the present occasion—some of the politicians of the country have considered that the country has gone too far in pledging its credit for so large an amount for some twenty or thirty years in advance. However, no one who contemplates the vast forests of this country, the immense extent of its mineral wealth and its great agricultural resources, can doubt that when we get enough hardy immigrants to develop our various resources, those railroads will before many years become not only a profit to Canada, but a profit to the proprietors. (Hear, hear, and some indications of incredulity.) This investment of our capital, and this pledging of the credit of the country, has brought about a consequent increase of the tariff. Our English friends object to this, and very justly. But very probably we will come to consider before long the propriety of abolishing custom-houses altogether, and thus meeting the views of the manufacturers of England, and standing on more friendly terms with the people than heretofore. (Cheers.) And as our American friends are now coming as individuals to settle among us, probably the whole Northern States, and perhaps the whole Southern States, will by and by be wishing to join Canada, and coming to prefer the good old English strains, will substitute "God save the Queen" for "Hail Columbia." [Cheers and laughter.] And I have no doubt the people of Canada will join me in offering them a "cead mille Failte." [Cheers.] I again thank you for the manner in which you have received the toast of my health, which his Excellency has done me the honour to propose. [Cheers.]

Earl Mulgrave again rose and said—Since I arrived on the ground this afternoon, I have been requested to propose a toast to you, and most willingly do I do so, though I regret that the task has not fallen to one who, by a more intimate knowledge of your country and greater eloquence, would be able to do greater justice to it. Having in former days resided for some years among you, I was vain enough to suppose that I knew something of Canada. My present visit has taught me how little I really knew of her. I have been in the habit of admiring and frequently praising Canada, but I had no idea till I arrived here a month ago, and had the opportunity of observing it myself, of the rapid stride you have made in the last twenty years. [Cheers.] Whether I look at the extent of your commerce, at your public buildings, or at your improvement in

agriculture, I am lost in amazement. And I must own that I have seen since I have been in your city, what has astonished me more than anything else. I had no conception that Canada could boast of Public buildings like those which I have seen in this city. (Cheers.) I yesterday had the pleasure of visiting the University of Upper Canada, and I assure you that I cannot call to mind at the present moment any modern building of the kind in England or elsewhere, with which that building would not favourably compare. (Cheers.) I have this morning had the opportunity of visiting your Osgood Hall, and that also is worthy of comparison with any buildings of the old country. This afternoon I have had the opportunity of witnessing the wonderful strides which you have made in agriculture. I have always myself taken a deep interest in agricultural pursuits, because I feel that without a due development of the agricultural resources of a country, whatever her commercial or her mineral resources may be, she cannot arrive at that position to which it ought to be the aim of every country to arrive. We may live without luxuries, we may live without the minerals, but cannot live without the food which is required to sustain us. I have frequently visited the agricultural meetings in England, and I can assure you that I do not think I ever witnessed a show, which taken as a whole, showed a larger number of specimens of what scientific agriculture can produce. (Cheers.) I do not mean to say that in some of the agricultural meetings in England you would not see individual animals which would compare with or even beat those which I have seen to day—I wish to be frank and I do not wish to flatter—but I will say that, taken as a whole, I never saw a more creditable display. (Cheers.) I believe there is nothing more calculated to improve your agriculture and your manufactures than those annual displays which you have so wisely instituted. Long may they continue and amply may you reap from them the rewards which you deserve. (Cheers.) As regards your commercial interests, I, a stranger among you, cannot speak so fully, because they do not so easily meet the eye. I had expected to see improvements in Canada. I knew that in a great and a new country, having a population such as Canada\* is blessed with, improvements must be rapid. You have not only the advantage of a soil equal to any in the world, but you have a climate which enables you to produce almost anything that you desire, and you have also the advantage in this new country of reaping the experience of the old. You have wisely availed yourselves of that experience, and the result cannot fail to answer the most sanguine hopes of those who are anxious for the prosperity of this country. Gentlemen, I propose to you, the agricultural, commercial, and manufacturing interests of Canada, and in connection with the toast, the



health of the President of the Agricultural Association of Upper Canada. (Cheers.)

F. W. Stone, Esq., President of the Agricultural Association, briefly responded. He thanked those assembled for the honour they had done him in drinking his health. He said he had been delighted with the Exhibition now in progress, and hoped to see the country continue to make progress in agriculture from year to year. He regretted that he had no experience as a public speaker, so as to be able to do justice to the interests of agriculture on this important occasion, and he would, therefore, call upon Col. Thomson, the President of the Board of Agriculture, who had been connected with the Agricultural Association since its commencement, to take his place in replying further to the toast. (Cheers.)

Col. E. W. THOMSON said they were now holding the seventeenth exhibition of the Agricultural Association of Upper Canada. Many within the sound of his voice would recollect when the Association held their first exhibition in this city, what a poor appearance they made at that time, and how many prophecies were indulged in that the project would not succeed. They were told that this was too young a country to undertake anything so gigantic. They did attempt it, however. How they had succeeded, it did not become him to say. He thought, however, if he were to refer to statistics, that he could show that their progress had been great. Since the first exhibition was held, they had advanced more than tenfold. (Cheers.) He had been called upon to respond to the toast, because he was one of the first instigators of the Exhibition. He and half a dozen other individuals took it into their heads that if an exhibition of this kind could be held in the State of New York, it could be held here also. They did not hope to equal the New York Exhibition, but they thought they might make the attempt, and gradually progress towards what they had witnessed on the other side. And now they had it acknowledged by all who had witnessed both, that the Exhibitions in Canada quite equalled those in the State of New York. (Cheers.) He would not draw a comparison between the Exhibition he witnessed this year at Battersea in England and our own. But he would say this, that when we took into account that the population of London alone was equal almost to the whole population of British North America, we had no reason to hide our heads. Our Exhibition on this occasion, if not equal, was not far inferior to the Great Exhibition of the Royal Agricultural Society of England. (Cheers.) In many departments we were quite equal, and in some, particularly in horses, we have a better exhibition here than they had at the Royal Agricultural show at Battersea. This arose from the fact that we had taken great pains to improve the breed of our horses, and that our spirited importers had brought from the old

country the very best they could find. As regarded both horses and cattle, the Association had encouraged their importation by giving a large additional premium, whenever a superior animal was brought in. Mr. Stone, Mr. Miller, Mr. Snell, and other gentlemen had turned their attention to the importation and improvement of stock, and had conferred, by their enterprise in that way, immense benefit on the country. (Cheers.) We had still, however, much improvement to make, in the department of implements. We had certainly improved very much on the implements shown at our first Exhibitions. These were brought over by manufacturers from New York State to show us how much better off the people there were than ourselves in that respect. But our mechanics studied those implements, copied them, imported largely the implements manufactured in England, and had now, he believed, exhibited for several years as fine a show of implements in Canada as ever were exhibited in any part of America. (Cheers.) But there still remained for our mechanical friends something to do. In visiting England, he had witnessed vast improvements in agricultural implements, and had seen a display in that respect far beyond what we could show here. In thrashing machines important improvements had been made within the last two or three years, which he hoped our ingenious mechanics would soon copy. He had been struck also by the portable steam engines for carrying on ordinary farm work, which all over America was done by horse power. He hoped that before long these improvements would be introduced into Canada, and that our motto would still be Onward! (Cheers.)

Rev. Dr. McCaul was requested by the Mayor to propose the next toast. He said he had much pleasure in proposing the health of those who had honored us with their presence on this occasion—of those noblemen and gentlemen who had come from that far off land, still endeared to us by the familiar name of home, long as we have lived here—(cheers)—of those too who had come from different parts of Canada, and were now around this board, representing the intelligence, the enterprise, and the industry which had made Canada what it is, qualities which he hoped would be transmitted by us to our descendants, who would reclaim those parts of the country not yet brought under cultivation, until the whole land should blossom even as the rose. (Cheers.) Most deeply did we value the honour conferred upon us by the guest of the day, his Excellency the Governor General, on this occasion. That nobleman had come amongst us with the reputation of many excellent qualities to recommend him. He had come here with great practical experience, such as would enable him to grapple with the political difficulties which might present themselves in the high position in which he was placed. He had come to us with a reputation for busi-

ness habits which we Canadians knew well how to value. And above all, he had come to us with the determination, as had been proven by the experience of it at home, to do his duty to the Queen and to Canada, with fearlessness, with honesty, and with impartiality. (Cheers.) Coming amongst us with such advantages, he thought he might predict that in the administration of the Government, his Excellency would exhibit those qualities which are pithily expressed in the motto of the noble house of which he is now the head, and that if danger should arise he will discharge his duty *fortiter*, with courage; that in every relation of life he will discharge his duty *fideliter*, with honor; and the result of such a discharge of duty must be *feliciter*, with a happy issue. (Cheers.) But there were other guests here this evening to whom he would desire to refer. Some of our friends from the other side of the lakes had done us the honour to come here. (Cheers.) He thought that, as a Canadian, he might assure them, that we extended the hand of friendship most cordially to every one of them. (Cheers.) Be they from the North or from the South, we knew no difference here. But we could assure them that amid the trouble and afflictions they were now enduring, they had the deepest sympathy of every reasoning man in Canada, and that our earnest prayer to the Almighty was, that he might speedily relieve them from this war, which was depopulating their cities, devastating their homes, ravaging their fields, and scattering their substance to the winds, and that He would speedily bless them with peace, enabling them to enter once more on that career of unexampled prosperity which they had previously enjoyed. (Cheers.) Dr. McCaul concluded by proposing "Our Guests." (Cheers.)

LORD F. PAULET said he had been requested to respond to this toast. After the eloquent speeches to which they had listened, it would be idle in him to attempt to make another. He would only say that some twenty-two years ago, when he first had the pleasure of visiting this city, there were no railroads, and he saw little or nothing of the Province of Upper Canada. He was happy now, on his return after a lapse of twenty-two years, to see the country so prosperous, and inhabited by a free and independent population. (Cheers.) He wished God-speed to them all. (Loud Cheers.)

DR. KING, President of Columbia College, N. Y., was also called upon to respond. He said he was entirely taken by surprise when his name was mentioned, as he was here in no sense as a representative person. He would say, however, that what he had seen had gratified him inexpressibly, and that the kind expressions which had been uttered on this occasion with regard to his country had touched him deeply. (Cheers.) We are in a state, he said, of great tribulation, but we of

the North believe that, in the spirit of the inheritance which we derive from the mother country, we are contending for the noblest principles of liberty. We insist that we are contending for that, for which Great Britain has been willing to sacrifice everything she possesses rather than surrender it, the power of the constitution. (Hear, hear.) We insist that, when we are told that certain claims cannot be admitted, and if pressed by the Federal Government should be resisted by arms, we would be unworthy of our descent if we did not say, take then the penalty of arms, we fight for all you have consented to be governed by, and if you say you will not be governed by this, we say you shall be, or we shall sink with our flag. (Cheers.) Dr. King then expressed the satisfaction he had experienced in visiting the public buildings of Toronto, and said that two such buildings as the University and Osgoode Hall were not to be found in the wide domain of the United States. He expressed also his satisfaction with what he had witnessed in the Exhibition. It had astonished him to see in this young country a display of such animals, of such products of the earth, and of such mechanical contrivances as were brought together on these grounds. (Cheers.) He was proud to feel that in the United States and Canada they derived their blood from the same source, and he trusted the day would never come when that blood would seek to try which of the two was the best, on the different sides of the lakes. (Cheers.)

HON. G. W. ALLAN was called upon by the Mayor to propose "the Exhibitors." He said it was to the exhibitors we were indebted for what we had witnessed to-day, and it was fitting that their health should be drunk on this occasion. He had listened with pleasure to the testimony borne to the excellence of this Exhibition by those who had an opportunity of witnessing the exhibitions in England, and he was happy to bear his own humble testimony to the same effect, having had an opportunity of seeing various English Agricultural Shows. It had been a matter of great pride and satisfaction to him to-day to compare the stock sent by Canadian exhibitors with what he had seen on similar occasions in England. (Cheers.)

COL. R. L. DENISON briefly responded.

HON. T. D. MCGEE was requested by the Mayor to propose "The Press." He did so in a few eloquent remarks, in which he spoke of the power of the press for good, if rightly used, and for evil if unscrupulously employed, and pointed out the beneficial influence it might exercise in this country, in removing asperities, rooting out prejudices, and training people coming from different countries with different feelings and habits of thought, to



live together harmoniously and amicably. Mr. McGee was warmly cheered throughout his remarks.

Hon. W. MACDOUGALL was requested, as having been connected with the agricultural press, to respond. He did so briefly.

Three cheers were then given for the Governor General and Lady Monck, three cheers for Lord Mulgrave, three cheers for the Queen, and the proceedings terminated about half-past five.

#### MEETINGS IN THE AGRICULTURAL HALL.

On Wednesday evening the first meeting was held in the spacious Hall of the new building of the Board of Agriculture, at the corner of Queen and Yonge streets, when the President of the Board took the chair, and gave a sort of historical sketch of the rise and progress of the Agricultural Association, tracing its gradual, and of late, rapid progress, in an interesting manner. He stated that in this new building the Board had got at length a habitation of its own, where every accommodation for offices library and museum was possessed at a comparatively small expense, the ground floor and basement having been leased to James Fleming and Co., as a seed and implement warehouse. The Board would now have permanent quarters, thereby avoiding the numerous and serious inconveniences hitherto experienced in changing their office, and will have to look to agriculturists and mechanics in different sections of the Province to assist them in furnishing the projected Museum with suitable and characteristic specimens. Some remarks were afterwards made by Professor Buckland, F. W. Stone, Esq. President of the Association; Asa A. Burnham, Esq., Hon. H. Ruttan, and Mr. Comstock, of the *New York Argus*, who spoke in complimentary terms of the Exhibition, and what he had seen of the spirit of Canadian farmers and mechanics. The meeting was but thinly attended, and adjourned to next evening (Thursday) to hear a lecture by Mr. Smith, Veterinary Surgeon to the Board of Agriculture, when F. W. Stone, Esq., took the chair at eight o'clock; the attendance was more numerous than on the preceding evening, but far from being so large as it ought to have been on such an occasion.

Mr. Smith delivered a practical and interesting lecture on the diseases of the horse, and their

proper modes of treatment confining himself chiefly to the diseases which he had found to be most prevalent among horses in this country. He illustrated his remarks as he proceeded, by referring to a skeleton of a horse placed on the platform. Spavin was the first disease he adverted to. Of this he said there were two kinds, the first arising from inflammation of the periosteum, and the second from inflammation of the internal structure of the hough. The former generally had its origin in some mechanical injury, and if it occurred well back and in a well formed limb, it generally did not interfere much with the usefulness of the animal; but, if it existed forward, it was well to have as little as possible to do with an animal labouring under such a disease. He explained how the existence of spavin might be detected, and then mentioned the best modes of treatment. In the early stage the application of cold water was a simple and effectual remedy. In the later stages, he recommended blistering or the insertion of a seton; and while under treatment, it was essential that the horse should have some six weeks or two months' rest. In the second form of spavin, where caries existed in the joint, the best mode of treatment was counter irritation. Mr. Smith made some remarks on bog spavin and blood spavin, and then passed on to the disease known under the name of windgalls. Most horses that had any large amount of work to do, had windgalls more or less, and their existence, if the qualities of the animal were generally good, should not lessen his value much, unless when they serve to indicate the existence of some other disease. In an early stage they could be removed, but if allowed to become confirmed they could hardly ever be got rid of. The mode of treatment he recommended was to allow perfect rest, and to bandage the parts affected with cold water bandages. He then proceeded to speak of diseases of the foot, the anatomy of which he minutely explained. One of these known by the name of navicular disease, he said he had found to be pretty common in Toronto. It arose from a strain of some of the fibres of the tendon passing over the navicular bone, the result being what was called a contracted foot. He mentioned the proper modes of treatment for the disease, the great thing being to attend to the shoeing, so that the toe should be as short as possible and the heel raised high, less pressure in this way being thrown on the tendon. He then referred to the treatment of corns, and proceeded next to speak of diseases of the lungs, especially heaves or thick wind or broken wind. Thick wind arose from a thickened, corrugated condition of the air cells, and frequently arose from colds or attacks of bronchitis not being properly attended to. The inspiration and expiration were quick; the capacity of the air cells being diminished, it was necessary for the air to be taken in very

frequently. Thick wind might be alleviated and in some cases cured. The great thing was to attend to the food; the animal should be fed on easily digestible and nutritive food. Broken wind, or what was called confirmed heaves, was caused by rupture of the air cells, so that the air escaped into the cellular tissue. In breathing, the expiration was done with a double jerk, and the disease was generally accompanied by a hollow cough. The disease frequently had its origin in an animal being driven fast immediately after feeding, or drinking a large quantity of water. One of the symptoms was a heaving of the flank, as if the horse was trying to get rid of the air, which it could not pass off through the windpipes. As to the mode of treatment a confirmed case was incurable, but in the way of alleviating the disease attending properly to the food was worth all the heave powders out. The best food was bruised oats, cut hay, slightly damp, and good, clean oat straw, and it should be given in small quantities, and at frequent intervals. During the day the supply of water should be restricted. Carrots, too, were good in this and all chest diseases. Administering large quantities of hog's lard, lard pellets, &c., had the effect of mitigating the symptoms for a time. These acted mechanically, by pressing down the stomach and relieving the diaphragm. He had known this plan to be restored to, accompanied with the withholding of water for twenty-four hours, when a horse affected with the heaves was brought to a fair to be sold. If there was any suspicion of such a trick, the best thing to do was to give the horse a good drink of water and a good gallop, and it would soon be discovered whether it was broken winded or not. Mr. Smith went on to speak of what is called the horse distemper, which generally shows itself in the formation of an abscess in the sub-maxillary space between the jaws, and of certain diseases of the mouth, shoulder, &c., and concluded by explaining the various points to be attended to, when the "soundness" of a horse was matter of investigation. Mr. Smith was warmly applauded at the close of his lecture.

Mr. John Barwick moved a vote of thanks to Mr. Smith for his able and interesting lecture. He said he was sure every gentleman present must have been pleased with it, and must have been edified by the information it imparted.

Hon. H. Ruttan seconded the motion which was put from the chair and passed unanimously.

Professor Buckland said he wished to offer a few observations, and proceeded to explain the action taken by the Board of Agriculture, in inducing Mr. Smith to come to this country as their veterinary surgeon. They had selected that gentleman, chiefly on the recommendation of Professor Dick, of Edinburgh, one of the oldest and ablest teachers of the veterinary art in the mother country, and he had brought with

him testimonials to his ability of the highest order. Coming among us with such high qualifications, he hoped he would very soon be able to establish in this neighbourhood, a remunerative and even a lucrative business, and that he would be the means of diffusing valuable information by instructing young men who might come to Toronto to attend lectures on agricultural subjects. Indeed it was anticipated that his own chair of agriculture in the Provincial University would be strengthened and made more useful than it otherwise would be, by there being a competent person to teach the veterinary art, both in its theory and its practice. (Hear, hear.) Prof. Buckland then congratulated the agriculturists present on their meeting for the first time in this Agricultural Hall, which was designed ultimately to afford accommodation for an agricultural collection—specimens of our cereal products in the grain and in the straw, of the soil of various sections of the country and of the subjacent rocks; models of agricultural implements; specimens of morbid anatomy of the horse, to illustrate the veterinary art, &c., &c. With the co-operation of farmers throughout the Province, a most valuable collection might thus be formed. (Hear, hear.) In conclusion, Professor Buckland said it was with very deep regret that he had heard this afternoon on the show ground, of the decease of an old and valued friend of the Association, and one who, he might say on this occasion, was the originator of the idea of establishing veterinary teaching in this country,—he referred to the death of their esteemed and venerated friend the Hon. Adam Fergusson. He had been informed to-day that Mr. Fergusson died very suddenly last night. Though he departed full of years and full of honours, they could not, as an Agricultural Association, receive without the deepest pain the intelligence of the death of their old and valued friend. (Hear, hear.)

Mr. W. Smith, Leeds county, made a few observations on the importance of veterinary instruction, and said he felt it would have been worth his while to travel all the way he did to the show, if it had only been to listen to the valuable lecture they had heard to-night.

Hon. Mr. Ruttan expressed his approval of the remarks of the gentleman from Leeds.

Professor Buckland said there was a gentleman present from Lower Canada, who was well known from his connexion with agriculture, and his having for some time conducted the Agricultural Journal of Lower Canada. If that gentleman had any remarks or suggestions to make, he was sure all present would be delighted to hear him.

Mr. Perrault, having been thus called upon said he had attended several Exhibitions in Upper Canada of late years, and had been happy to observe constant improvement each successive



year. He had been prepared by the Exhibition last year in London to see something very great in Toronto, but he must say that the display here, in several departments, was far superior to what it was in London. He had especially remarked this in the display of Ayrshires. He had seen this breed in almost every country of Europe, and in Lower Canada it was in much favour, because there they were in a condition which made them go more into dairying than into feeding cattle. He had seen in Upper Canada cattle of the Angus breed, and Devons and Herefords, to a far greater extent than they existed in Lower Canada, but he could not understand why it was that they were imported, in competition with Durhams, which were well known as the best breed for feeding purposes. On the continent he had met with many Ayrshires and Durhams, but not with the Angus, Devon, and Hereford breeds.

Mr. T. P. Holmes, of Bedford, N. Y., said if any one doubted the propriety of filling this Hall with agricultural specimens, as Professor Buckland had said was the intention, a visit to the Agricultural Museum at Albany ought to satisfy him of the value of such collections.

Mr. J. Foote, of East Durham, spoke shortly of the importance of having the rising generation of farmers instructed in the veterinary art. The circumstances of the Province were scarcely such as to support veterinary surgeons throughout the country, and it was therefore the more necessary that young men entering on farming life should acquire some practical knowledge in that department. In that view he was happy to understand that lectures on the veterinary art were to be given by Mr. Smith.

Mr. Wilson, of Chatham, urged the propriety of inducements being offered by the Association in the way of premiums, to bring out some good and efficient tile machine. He suggested also that, with a view to the benefits of improved stock being brought within the reach of the whole farming community, the Montreal Steamship Company, as a condition of receiving the subsidy, should be bound to bring out, free of charge for conveyance, such stock as it might be desirable to import, each county in succession receiving a supply.

The President thought Mr. Wilson's suggestion about the importation of cattle impracticable, and said it was a great matter that the Montreal Steamship Company were willing to carry cattle at reasonable rates, considering that the Cunard Company would not carry them at any price. As to tile machines, if he had the clay on his farm, instead of wishing to manufacture tiles for his own use, he would get a tile maker to bring his machine along and manufacture them for him at so much a thousand. As to the remarks of Mr. Perrault, that gentleman, coming from Lower Canada where all the cattle they had were small things, so small that you

could carry one under one arm and another under another—(laughter)—probably thought that in Upper Canada we were advancing too fast, and therefore objected to our importation of Devons and Herefords. He hoped the remarks of their Lower Canada friend would induce some of the Upper Canada stock raisers to send down cattle to Montreal to the Show there next year, in order that we might carry off some of their surplus money, which they accumulated by making us pay too dear for other things. (Laughter.)

Mr. Stock, Flamboro', asked Mr. Perrault to say how the best specimens of cattle he had seen here compared with those in England.

Mr. Perrault said that, putting out of view some few specimens of extra animals in England, the cattle in Canada of imported breeds, he thought, would compare favourably with cattle in England.

#### MEETING OF THE AGRICULTURAL ASSOCIATION.

The annual meeting of the Agricultural Association was held in one of the offices on Friday Morning, commencing at 10 o'clock—the President, F. W. Stone, Esq., in the chair.

The Secretary, Mr. Hugh C. Thomson, having called the list of delegates from county and other societies, the following answered to their names:

ADDINGTON.—George Lake, Camden; John Sharp, Earnestown.

BRANT, EAST.—George Stanton, Paris.

BRANT, WEST.—J. B. Merritt, Scotland; Daniel Perley, Brantford.

BROCKVILLE.—J. W. Hough, C. Sibbald.

DURHAM, EAST.—Aaron Choate, Port Hope; Nathan Choate.

DURHAM, WEST.—S. Wilmot, Newcastle.

ELGIN, EAST.—Stephen Wade, St. Thomas; James Armstrong.

FRONTENAC.—Henry Robinson, Ballynahinch; E. Jackson, Kingston.

GLENGARY.—Archibald Fraser, Fraserfield.

HALTON.—James Young, Georgetown.

HAMILTON.—George Roach, Peter Grant.

HASTINGS, NORTH.—M. Kerr, Tweed.

HASTINGS, SOUTH.—George Taylor, Belleville; Alexander McLaren, Tyendinaga.

KENT.—Duncan McVicar, David Wilson, Chatham.

KINGSTON.—George Baxter, Kingston; M. Flanagan.

LANARK, NORTH.—Jno. Menzies, Almonte.

LANARK, SOUTH.—Hon. R. Matheson.

LENNOX.—John Stevenson, Napanee; Wm. Gibbard.

LEEDS & GRENVILLE.—W. Smith, Thos. Newsome,

LEEDS, SOUTH.—Isaac Briggs, Gananoque; Oliver D. Cowan.

LINCOLN.—J. C. Rykert, St. Catharines; James Seymour.

MIDDLESEX, EAST.—Colonel Johnson, London.

MIDDLESEX, WEST.—Malcom McArthur, Lobo.

NIAGARA.—S. J. J. Brown, H. J. Miller.

NORTHUMBERLAND, EAST.—G. S. Burrill, Cobourg; George Roddick.

ONTARIO, NORTH.—Robert Spears, Uxbridge.

ONTARIO, SOUTH.—John Sheir, Whitby; W. Laing, Whitby.

OXFORD, NORTH.—John Barwick, Woodstock; Wm. Grey, Woodstock.

OXFORD SOUTH.—Jonathan Jarvis, Ingersoll; Michael Stover.

PEEL.—John Tilt, Derry West; R. A. Hartly, Edmondton.

PERTH.—R. Modervell, Stratford.

PETERBOROUGH.—John Walton, Peterborough.

RENFREW.—Alex. Stewart, White Lake.

TORONTO.—W. Sharp.

VICTORIA.—John Gibb, Lindsay.

WELLAND.—A. C. Scholfield, Port Colborne; Edward Jones, Thorold.

WELLINGTON, NORTH.—J. M. Fraser, Elora.

WELLINGTON, SOUTH.—Col. Saunders, Guelph.

WENTWORTH, NORTH.—W. D. Donaldson, West Flamboro'; William Dickson, West Flamboro'.

WENTWORTH, SOUTH.—James Calder, Carluke; Jacob Rymal.

YORK, EAST.—Thomas A. Milne, Markham; J. P. Wheler, Scarborough.

YORK WEST.—John P. Bull, York Township; E. C. Fisher, Etobicoke.

TORONTO HORTICULTURAL SOCIETY.—J. D. Humphreys, J. C. Small.

LONDON DO.—Adam Brown.

ST. CATHARINES DO.—John Holder.

BOARD OF ARTS.—Dr. Beatty, Dr. Craigie, Professor Hind, Professor Buckland, A. Brunel, W. H. Shephard, W. Edwards, W. Sharpe.

REPRESENTATIVES OF MECHANICS' INSTITUTES:—Thos. Stock, Waterdown; E. A. McNaughton, Newcastle.

#### ELECTION OF OFFICERS.

The President said the first business was the election of officers, and the first officer to be elected was the President for the ensuing year.

Mr. Barwick had much pleasure in proposing that Asa A. Burnham, Esq., of Cobourg, first Vice President of the Association, be the President during the coming year.

Hon. H. Buntan seconded the motion, which passed by acclamation.

Mr. Burnham thanked the Association for the honour they had done to him, in electing him to fill the office of President.

Dr. Beatty, seconded by Hon. John Carling, M.P.P., moved that James Johnston, Esq., of

London, the second Vice President, be the first.—Carried unanimously.

Mr. W. Ferguson said he had much pleasure in proposing J. C. Rykert, Esq., M.P.P., for Lincoln, as second Vice President. He believed that that gentleman had good claim to the position of second Vice President, and ultimately President of the Association, one of the highest honours that could be conferred by the people of this country. Mr. Rykert was well known as a practical farmer and stock breeder, and the appreciation in which he was held by his neighbours was shown by the fact that they had selected him to represent them in Parliament. He thought the Association could not make a better choice for second Vice President, than by electing Mr. Rykert.

Hon. D. Christie, M.L.C., had great pleasure in seconding the nomination. He thought Mr. Rykert was well deserving of the position which some of his friends desire to assign to him.

Mr. Aaron Choate begged to nominate Thos. Stock, Esq., of East Flamboro, a gentleman whose acquaintance he had only made since he came to the present Show, but who, he was satisfied from all he knew and had heard of him, would fill the position worthily.

Mr. Wilson seconded the nomination of Mr. Stock, and made some remarks finding fault with the managers of the Association for not adopting better measures to make the delegates acquainted with each other, when they came from distant localities to the Provincial Show, that they might consult as to who were the persons most fit to be their officers. Whether justly or not, there was an impression abroad that the members of the Board of Agriculture aimed at managing things so that the delegates would be kept in the dark, and have as little influence in these matters as possible.

Mr. T. A. McIne, seconded by Mr. R. A. Hartley, nominated J. P. Wheler, Esq., of Scarborough.

A show of hands being taken and counted, the vote was found to stand thus—for Mr. Rykert, 45; for Mr. Stock, 12; for Mr. Wheeler, 10. Mr. Rykert was accordingly declared elected.

Mr. Rykert begged to thank the delegates for the compliment they had paid him. He might not be generally known to the agriculturists of Upper Canada as a practical farmer, but those who were acquainted with his farm, he believed, would say it compared favourably with farms generally in Western Canada. He would not claim on that account a first place in this Agricultural Association, but he would claim that agriculture had no warmer friend in this Province than himself. He lived now, and had lived nearly all his life on a farm, and in electing him to the office of second Vice President, they elected one who would bring to the affairs of this Association some degree of energy. He was glad to hear the other day the testimony of



personages of high authority that our Exhibition compared favourably with those of the mother country, but he was satisfied that if they all put their shoulders energetically to the wheel, they could make yet a still more creditable appearance. He again thanked the Association for the honour they had done him, and hoped the confidence they had reposed in him would not be misplaced. (Applause.)

Mr. Young moved that R. L. Denison, Esq., be re-elected Treasurer. He said Col. Denison had so long occupied this position, and had filled it so creditably to himself and with such satisfaction to the public, that it was unnecessary for him to add a single word in support of the motion.

Mr. Rykert seconded the motion, and it passed unanimously.

Col. Denison thanked the Association for this renewed expression of their confidence in him. During the many years he had filled this office, he had endeavoured to do his duty, and he thought the same thing might be said of all who had in their hands the management of the affairs of the Association. They were all good, energetic men, and by adding fresh blood to the management, by the election of such men as had been elected to-day, he had no doubt the Association would continue to go on prosperously. With the permission of the President, he would now read the financial statement and audit of accounts.

The President having asked if the financial statement should be submitted, it appeared to be the general feeling that it should be postponed till the regular business was disposed of.

#### THE NEXT EXHIBITION.

Mr. Rykert said that last year he advocated the interest of a small locality called St. Catharines, and his proposition that the show should be held there did not meet with great favour. He made that proposition because he was opposed to the centralization of the Exhibition in only four localities. He was in favour of carrying it from one end of the Province to the other, and not compelling the places where it was held to erect permanent buildings. In proposing that next year's Exhibition should be held at Kingston, he did not abandon the position he took up last year, and he trusted that, when the proper time came, he would get the aid of his Kingston friends in getting it taken to St. Catharines, Guelph, Woodstock, Cobourg, Brantford, or some other town. At present, however, he hoped there would be no amendment to his motion that the Show should be at Kingston next year. He thought this was due to the Kingston people. We had now had three successive Shows in the West, and it was right that the next should be held in the East.

Hon. Mr. Carling seconded the motion. He differed, however, from Mr. Rykert, in the views he had expressed about holding the Pro-

vincial Show in small towns. He did not think it was the object of this Association to hold the Fair in any particular place for the benefit of that place. What they ought to have in view should be to hold it in places where the greatest number of people could be brought together, and, where the best accommodation in the shape of lodgings, &c., could be provided for them. He was happy to know that the city of London was such a place. Last year 23,500 tickets were sold in London on the Thursday; and on the same day in Toronto only 22,000 tickets were sold.

Hon. Mr. Ruttan had much pleasure in concurring in the motion to hold the next Show at Kingston. He argued also with Mr. Rykert that the Exhibition should not be confined to a few principal cities. The Association received a grant of public money, and its object should be to extend the advantages of that grant to all parts of the country. He would push the Exhibitions into the back country, so as to enlist in their favour the sympathies and the co-operation of all classes of the community. He would have them held back in Ottawa, Perth, Goderich, &c. He was sorry to see that a number of the members of the Board of Agriculture had gradually fallen into the centralization system, forgetting that it was their duty to see that the interest of the people of all parts of the country should be attended to.

Hon. David Christie said Mr. Ruttan had complained of the Board of Agriculture as giving its influence to carry out the centralization system.

Hon. Mr. Ruttan—I complained in their acquiescing in it.

Hon. Mr. Christie said it was the duty of the Board of Agriculture to acquiesce in the expression of popular opinion as given at the annual meetings of the Association. But he knew of no action which the Board of Agriculture had taken committing itself to centralization. Where the Exhibition should be held was decided at the annual meetings by the votes of the delegates, and he could not permit the impression to go abroad that the Board had committed itself either for or against the centralization scheme.

Hon. Mr. Ruttan said he had spoken, not of the Board, but of several members of the Board.

Col. Denison said it was necessary, before the motion was put, that the delegates from Kingston should come forward and say what offer of money they would make, and what guarantee they would offer as to buildings for the proper accommodation of the stock.

Mr. Ferguson said the Association ought to have sufficient confidence in the honour of Kingston, without getting the pledge demanded by Col. Denison. Kingston was the first to put up a permanent Building. It was the first to erect a Crystal Palace, and Toronto followed suit, then Hamilton, and then London. Kingston

last time had better buildings than there were at the previous Fair at Toronto, and he was quite satisfied that next year Kingston would have better buildings than Toronto had now.

Dr. Beatty said that the Treasurer, in requiring a pledge, was only carrying out the law agreed upon by the Association.

Col. Denison said it was not pleasant to insist upon it, but he did not think the Association could vote upon this motion until it had a pledge from Kingston in writing.

Mr. Ferguson—You have no right to demand anything of the kind.

Mr. Flanigan, Warden of Frontenac, Lennox and Addington, said the city of Kingston and the county of Frontenac were acting quite unanimously, and would do everything in their power to make the grounds all they should be, and to put up every necessary building. The Association need not be afraid but everything necessary would be done. They would find in Kingston better accommodation than they had ever had anywhere else.

Mr. Gildersleeve, Mayor of Kingston, said he held in his hand authority under the seal of the city of Kingston, authorizing him and the members of the Corporation who accompanied him to give a pledge to any reasonable extent the Association might demand.

This paper was handed in and some further discussion occurred, in which Mr. Ferguson, Mr. Rykert, Col. Denison, and Col. Thomson took part. In the course of this discussion a resolution, passed in 1858, was read, affirming, "That it is not in the power of this Board to fix the location of the Exhibition in the year 1860, or any year beyond next year, but that in the opinion of the Directors the Exhibition should not in future be held at any place where there are not permanent buildings erected, or assurance given that permanent buildings will be erected, and also that ample accommodation will be offered." The motion that the Exhibition next year should be held in Kingston was ultimately adopted unanimously.

Hon. H. Ruttan gave notice that at the annual meeting next year, he would move that the resolution which had just been read be rescinded.

#### THE HON. ADAM FERGUSON.

Col. Thomson said that since they had assembled in Toronto, they had heard announced the death of an old friend of this institution, and he was sure some such resolution as that he was now about to propose would receive the cordial approval of the meeting:—

"That this Association have learned with deep regret that, since the meeting of the Association on this occasion, one of the first and most indefatigable friends of the institution has been called from the scene of his earthly labours, and they desire to record their high estimation of the value of the services of the late

Hon. Adam Fergusson, of Woodhill, and the esteem in which he was held by the Board of Agriculture, of which he has been a member since its formation, and also by the farmers of Canada at large."

He said that having had so long and intimate an acquaintance with Mr. Fergusson, he could not submit this resolution without making one or two remarks. Mr. Fergusson was one of the first who was consulted when the getting up of this Association was first spoken of. He thought it was a difficult undertaking, but consented to give his assistance, and he did assist most efficiently. He [Col. Thomson] was President at the first meeting of the Association, and requested Mr. Fergusson to prepare an address. He did so, and it appeared in their Transactions as the first of the annual addresses delivered before the Association. And from that day to the present time Mr. Fergusson had always been ready to give the Association his earnest assistance in everything which tended to advance the prosperity of the agricultural interests of Canada. [Hear, hear.] It was owing to the indefatigable exertions of Mr. Fergusson and a few others that the Association had attained its present position of prosperity and usefulness.

Hon. D. Christie said—I have a melancholy satisfaction in seconding the resolution which has just been moved. I have had the honour and advantage of knowing Mr. Fergusson almost from childhood. He was my father's friend, as well as my own, and I was taught to look up to him as an honest man, and I believe I may say a Christian man. He was long associated, as many of you know, with the advancement of Agriculture in the mother country, being one of those who had the honour of originating the Highland Society of Scotland. (Hear, hear.) When he came to Canada, he was not backward to engage in a similar work, and he has lived to see the interests of Agriculture most successfully advanced in this country. While he was amongst us, he was always foremost in every good work. I have had the honour of being associated with him as a member of the Board of Agriculture since its formation, and I can cheerfully and heartily bear testimony to the truth of what has been said by our friend, Col. Thomson, that on every occasion when it was in his power to be present, he has used his utmost endeavours to promote the success of the Agricultural Association. But I know that no words of mine are necessary to endorse his many virtues. His works follow him. (Hear, hear.)

The resolution passed in solemn silence.

#### VOTES OF THANKS, &c.

On motion of Mr. Asa A. Burnham, seconded by Col. Johnston, a vote of thanks was passed to the retiring President, Mr. Stone, for his able and valuable services during the past year.



Col. Thomson brought up the draft of a new code of Rules and Regulations of the Agricultural Association, prepared by a committee appointed for the purpose.

After some conversation, it was agreed, on the motion of Mr. Grey, of Woodstock, to defer the consideration of these rules till the next annual Meeting of the Association.

On motion of Mr. Grey, seconded by Mr. M. Stover, the thanks of the Association were voted to the Local Committee for their valuable services in contributing to the success of the Exhibition.

On motion of Mr. Ferguson, the appointment of the Local Committee for the next Exhibition was referred to the Council of the Association.

The meeting then separated.

### The Close of the Exhibition.

It has been usual in former years to wind up the proceedings of the Exhibition with a public meeting on the grounds on Friday afternoon, at which the Prize List was read, and a written address read by the retiring President. This year the meeting was held, but the prize list was not read, probably because it was considered to be unnecessary after its publication in the *Globe* and *Leader*, and the retiring President did not read an address. Some other interesting proceedings were instituted. Shortly before two o'clock the very efficient Cobourg Brass Band stationed themselves on the stand at the east end of the machinery shed, and their excellent music soon had the effect of collecting a large crowd. After the assemblage had been entertained by the band for about half an hour, the retiring President, the President elect, and other officers of the Association came upon the stand, and it was announced to the crowd that they would have the pleasure of witnessing a procession of the horses and cattle, which had been adjudged worthy of the prizes of the Association. This very interesting ceremony occupied about twenty minutes, and many were the exclamations of admiration as the splendid animals were marched past the stand.

F. W. Stone, Esq., then came forward, and said it had been usual at former Exhibitions for the retiring President to deliver an address before the close of the fair. From various causes he had been unable to prepare an address to deliver on the present occasion. He could not, however, allow the meeting to separate without expressing his sincere gratification at the unusual display of stock, implements, &c., witnessed at the present Exhibition. It was matter of much importance to him that he was able to congratulate them on its complete success. [Cheers.] But, instead of delivering an address himself, he should now call on the President of the Board of Agriculture, who had been con-

nected with the Agricultural Association since its commencement, to give to the meeting some idea of its progress up to the present time.

Col. Thomson said that Mr. Stone deserved credit for the moral courage he had displayed in bringing to an end the practice which had hitherto prevailed of an address being annually delivered at these shows by the retiring President. He (Col. Thomson) had been asked to say a few words on this occasion, perhaps for the reason that they gave him the credit of being the father of this institution. If this was the case, he certainly had reason to be proud of his offspring. It had grown to be a very respectable boy. [Laughter.] On this occasion we had had a display of the products of the country, creditable to every section from which they had come. As regarded the stock, the numbers might not have increased very materially, but every one who had seen the animals exhibited on this occasion would admit that the quality of stock shewn was very superior. [Hear, hear.] In the implement department also, there was a vast improvement over all former years. He believed we never before had had so good a display of implements as there had been on this occasion. The display of the products of the field and of the garden was very satisfactory. The articles of ladies' work, some said, were not so numerous as those shown last year at London but it was admitted on all hands that those which had been exhibited here were of the first quality. He trusted that year by year this exhibition of the products of Canadian industry would become still more creditable to the country. (Cheers.) One generation was fast passing away to make room for another. He had the melancholy duty of announcing that one of the most prominent members of this Association had just passed away from this scene of action—he alluded to the death of the Hon. Adam Fergusson. Mr. Fergusson had been a prominent member not only of the Association, but of the Board of Agriculture, and was amongst the most successful breeders of the country, having been one of the first to introduce the breed of short-horns into Canada. He might mention that the Association had this day passed a resolution, paying a fitting tribute, and it was unnecessary therefore that he should on this occasion say anything farther as to the worth of their departed friend. He hoped they were all sensible of the great blessing they had enjoyed in the weather being so favourable on this occasion. We had reason also to be thankful to the Almighty for his goodness with reference to the ingathering of the fruits of the earth during the present season. They had proved to be much more abundant and much finer than at an earlier season he had expected. Much apprehension had been felt on account of the dryness of the season, but the kindly rains came at last, and, with the exception of hay, he believed the crops were very fair throughout the country at

large. Since the last meeting of the Association he had had an opportunity, like many of those whom he now addressed, of visiting the old country. At the Great Exhibition he was one of seventeen who judged the articles in use for human food from all parts of the world. We are apt to think that our own country produced greater abundance of food and of finer quality than any other country. This idea a visit to the Exhibition would have shown to be too flattering to ourselves. In some countries, it was true, they lived on materials coarser than our finest wheat, and after examining specimens of the food raised in every country in the world, he found they were not in general equal to our own products. But he was bound in honour and in justice to the Australian Colonies to say that their wheat was superior to anything he had ever witnessed before. We must acknowledge they beat us in the article of wheat, the samples they showed being far finer and of more uniform white appearance than any wheat in Canada to his knowledge. Our wheat, however, took a very creditable rank at the Great Exhibition. We had a sample of oats also grown near Hamilton which was as fine a sample as any brought from any part of the world. The other samples of oats, however, sent from Canada, were inferior. Our peas were very good and received high commendation. The countries lying south of us showed the best samples of corn, which they produce in great abundance and of very fine quality. He would now call upon the Mayor of Toronto, to whom and to the Corporation the Association were under great obligations for the very ample accommodation they had on this occasion, to make a few remarks. (Cheers.)

Mr. Mayor Bowes, on behalf of the citizens of Toronto, begged to thank the farmers and mechanics of the country for the splendid display they had made on this occasion. He thought the retiring President had acted judiciously in departing from the custom of delivering a written address. These addresses were generally for the purpose of apologizing for defects on the part of the exhibitors, or on the part of those managing the Exhibition. But on this occasion he did not believe there had been a single defect to apologize for. The farmers and mechanics of Canada have reason to be proud of this Exhibition. He was sorry he was not a practical farmer himself, that he might have had his share with them in the glory of the testimony which was borne by the noblemen from England and Ireland, to the excellence of their cattle, the magnificence of their horses, the superiority of the products of the mechanical genius of the people of this country, which were now exhibited on those grounds. (Cheers.) Looking at what was the mainstay of the wealth of this country, he might be allowed to say that the farmers of Canada are Canada's aristocracy. [Cheers.] At the same time we had reason to

be proud that the nobleman now presiding over the destinies of this country, as its Governor, came forward and claimed respect on the ground that he too is a practical farmer. [Cheers.] The crown of Great Britain had never been properly represented here before. What we wanted was to have at the head of the affairs of this country either a business man or a farmer, that the resources of this great country might be intelligently understood and properly developed. The Mayor concluded by again thanking the exhibitors, on behalf of the Corporation and citizens of Toronto, and of the country at large, for the splendid display they had made on this occasion.

Col. Thomson, then begged to introduce to the assemblage Asa A. Burnham, Esq., elected that day as President for the ensuing year.

Mr. Burnham was received with cheers. He said he was proud of the honour which had been conferred upon him, and hoped that at the close of his term of office the Association would not regret the choice they had made. If he failed in any respect, it would not be from the want of an earnest desire to promote to the utmost the objects of the Association. (Cheers.)

Col. Thomson then proposed a vote of thanks to the Cobourg band for their valuable services, although he regretted that Toronto had not produced a band which could carry off the prizes from them.

The motion passed by acclamation.

Three loyal and hearty cheers were then given for the Queen, after which the band played the National Anthem. Three cheers, at the request of the Mayor, were given for the Agricultural Association, and the exhibitors and judges. Other three were given, at the request of Col. Thomson, for the ladies of Canada. Cheers were also given for the Cobourg band, the Mayor of Toronto, and the Governor-General, and with these proceedings terminated the Seventeenth Provincial Exhibition, in many respects the most successful which has ever been held.

#### THE RECEIPTS AND ATTENDANCE.

The total receipts of the Exhibition now closed amounted to about \$16,000; thus made up:—\$2,000 from the County Council, and from the City, Riding and County Societies; \$1,000 for the use of booths and stables; \$2,000 from members' tickets; \$750 for 3000 tickets sold on Tuesday; \$3,750 for 15,000 tickets sold on Wednesday; \$5,500 for 22,000 tickets sold on Thursday; and \$1,000 for 4,000 tickets sold on Friday; total, \$16,000—being \$3,500 in excess of the receipts at London last year, which from all sources were \$12,500. It was stated at the meeting of the Association yesterday that in London on the Thursday 23,500 quarter dollar tickets were sold, while on the corresponding day in Toronto the number was but 22,000. This fact



may indicate that, from the greater accommodation of visitors in Toronto, the pressure, instead of being concentrated on one day, was somewhat more equally distributed over the week. Be this as it may, the total number of visitors to the show has been considerably greater in Toronto than it was at London. Last year the number of quarter dollar tickets sold (two of which on Tuesday or Wednesday are necessary for the admission of one person,) was 38,568, yielding \$9,542. This year the number sold was 44,000, yielding \$11,000, in addition to the amount received from members' or season tickets.

#### THE REMOVAL OF THE GOODS, &c.

The Exhibition proceedings having been closed by the President, at two o'clock, many of the exhibitors proceeded to remove their goods. The sewing machine manufacturers, who had almost exhausted themselves during the week, in explaining to visitors the superior qualities of their machines, were among the first to commence packing up, and silence reigned in the eastern section after three o'clock. The fruit growers also commenced stowing away their grapes, plums, pears and apples, or presented them to their friends. Many of the visitors did not wait to be asked to partake of the dainties, but quietly helped themselves, and when remonstrated with gave the growers a "puff" for the excellence of the fruit. The ladies' work in the gallery had, to a great extent, disappeared. Outside, cultivators, ploughs and implements, were placed on waggons and conveyed to the railway depots to be in readiness for the morning trains. Only a few cattle and sheep were taken away before six o'clock in the evening. On Saturday morning however, the work of demolition commenced in earnest, and by dusk there was little left of the Great Exhibition of 1862 but the buildings themselves.

#### Foreign Opinions of the Exhibition.

[It will be interesting to our readers to know the views taken of our recent Show by intelligent persons at a distance, unconnected with the Association. We take the following from two leading journals belonging to the State of New York.—EDS.]

THE PROVINCIAL FAIR AT TORONTO, C. W.—The annual exhibition of the "Agricultural Association of Upper Canada," was held at Toronto last week, beginning on Tuesday and closing on Friday. This, we believe, is the 17th Exhibition of the Association, which has grown up from small beginnings to a position of great influence and usefulness. It has lately alternated between the four principal cities of the

Province—Toronto, Hamilton, Kingston and London—at each of which places permanent structures have been erected for its accommodation.

The favorable weather of the last week, ensured for the exhibition a good degree of success. The entries were very numerous in the principal departments, and the display, on the whole, highly creditable. Canada possesses a great deal of improved stock. Of cattle, the Short-horns, Ayreshires, Devons and Galloways have been imported in large numbers, and these, with their progeny, constitute a basis for an improved stock of which any country may well be proud. The Short-horns were most numerous at the exhibition, presenting many valuable herds in different sections of the Province. There were also a good number of the other breeds, as also of sheep and swine; but the limits of this article will not permit anything like a notice in detail of their merits. Of sheep, the long-wooled varieties predominate. Of swine, of which there was a very large and creditable show, the Berkshires, Suffolks and Yorkshires formed the principal attraction. There was a fine display of horses, several of them good imported animals, and we should think a visible and valuable improvement, from year to year, in this class of stock.

The Canadians have made rapid progress in the manufacture of farm implements and machinery, since the Association was organized, and their exhibitions, instead of being made up chiefly of American articles, as formerly, now consist chiefly of articles produced by Canadian mechanics. Almost every article required on a farm, from a portable steam engine to the most delicate garden implement, is now produced in their workshops. These were well represented at Toronto. In other branches of manufacture, such as woollen goods, paper, and various other articles, there has been a considerable augmentation, many of the establishments being owned by Americans who have lately settled in Canada. There were good specimens of most of the articles of domestic manufacture on exhibition.

The galleries of the "Crystal Palace" were devoted principally to the display of the finer specimens of goods—of paintings, musical instruments, needlework, embroidery, printing and bookbinding, and a multitude of articles interesting to the visitor, and affording good evidences of improvement. We noticed, among these articles, two large maps of Canada—one a lithograph, and the other a splendid copper plate engraving, five by six feet—published by Messrs. TACKABURY BROTHERS, of London, C. W. It is a fine specimen of work (done, we believe, in New York), and one of the best maps we have lately seen. To those of our readers who wish a map of Canada, we can commend this one as very desirable.

The excellent fruit season has produced, even

in this cold climate, some fine specimens of the different varieties. There was a large show of apples, some excellent pears and peaches, and a very good display of grapes—mostly, however, of hothouse growth. Of flowers there was nothing to boast of. The seed and vegetable department was excellent, the specimens being generally superior.

An important feature in the week's proceedings was the presence in Toronto of Lord MONCK, Governor General of British North America, Lord MULGRAVE, Governor of Nova Scotia, and several other distinguished noblemen and gentlemen connected with the British and Provincial Governments. The usual ceremonies of receptions, addresses and replies, dinners, speeches, balls, &c., were of course indulged in. The principal affair connected with the visit of the Governor-General to the exhibition, was a dinner given to his Lordship, at which some five hundred gentlemen sat down, and at which speeches were made by several distinguished men. The speech of the Governor General was a creditable performance, both in point of matter and as a specimen of ready oratorical powers. He is, "at home," an extensive farmer, and talked agriculture "like a book." His speech, however, was statesmanlike, and very taking among her Majesty's subjects in Canada. One passage was somewhat significant, and rather interesting to the few Americans present. The Mayor having alluded to the possible danger of a war with the United States, and to the late troubles in the Canadian Government on the militia bill, the Governor, in response, said he was in a position to state that his attention, and that of those who are responsible for the Government, had been directed to a system of defence which would soon be promulgated, and which he believed would be acceptable to the militia and people of the Provinces. The remarks of Lord MULGRAVE were plain and sensible—and, on the whole, we think the Queen need not be ashamed of her representatives in America.

The weather during the exhibition was delightful, and the attendance large. Some fifty thousand tickets were sold, which, with the admission on members' tickets indicates the presence of a large number of people. During the week, meetings for discussion were held at the new Hall of the Board of Agriculture, but they were thinly attended. This hall has been erected for the purposes of the board, at a cost, for land and building, of nearly \$20,000. The first floor is occupied by JAMES FLEMING & Co., Seedsmen to the Board, as a seed-store; the second floor for offices for the Board; and the third for a public hall, in which is to be gathered a museum, &c., after the plan of the Agricultural Hall in Albany.

The officers of the Society and of the Board are attentive to strangers, and do all in their power to make them feel at home. We are under especial obligations to Prof. BUCKLAND, who

fills the Chair of Agriculture in the University of Toronto, who took us to his hospitable house, and made our visit both instructive and agreeable to us, and we hope useful to our readers.

We had designed to say something of the public buildings in Toronto, the literary and charitable institutions, &c., but want of space forbids at present.—*New York Argus.*

### The Provincial Fair.

During the past week the Seventeenth Annual Exhibition of the Provincial Agricultural Society was held at Toronto, and our Canadian brethren have reason to congratulate themselves upon the success which marked its entire course. The weather was all that could be desired, and the entire people pleased with themselves and the prospects of an agreeable gathering. It was our good fortune to spend the closing day in looking over the various departments of the Show, and we give RURAL readers, as briefly as possible, a summary of what is to be witnessed, together with the impressions received in viewing the productions of our trans-Ontario friends.

The *Grounds* devoted to the display comprised nearly forty acres, and are situated about two miles from the centre of the city. Avenues leading to the point of attraction were numerous, and no jostling or crowding was observable. Entering the gate an inspection at once assured the visitor that the plans adopted in laying out and arranging buildings, sheds, tents, cattle, and horse rings, &c., were those which best met the wants of both exhibitor and spectator.

In the line of *Buildings* the committee are fairly entitled to a vote of thanks from all concerned, for the excellence of these structures was never before equalled at a Provincial Fair. Those devoted to cattle had a raised platform running through between the stalls, and a walk over this afforded excellent opportunity for observation. The horse stables were close, the comfort of the animal alone being sought, and the ring being the only fit place for exhibiting. The sheep and pig pens, and the shed for heavy machinery seemed to be the only temporary structures connected with the Society. All the others wore an air of strength and durability.

#### STOCK DEPARTMENT.

**CATTLE.**—*Durhams*—There were 125 entries of Short-horns, and, everything taken into consideration, they proved the feature of this Department of the Exhibition. Among the more prominent exhibitors were Geo. Miller, Markham; Fred. W. Stone, Guelph; John Snell, Edmonton; J. White, Georgetown; George Cooper, Toronto; Donald Robertson, Queenston; Gavin Craig, Grafton; John Miller, Brongham; James Kirkland, Haldimand; H. P. Welford, Woodstock; John Walton, Peterboro; John Dew, Yorkville; Arthur Hogge, Guelph, and



Adam Fergusson, Waterdown. A very large number of single entries were made, conclusively showing that the breed is fast becoming disseminated,—and many of these we would be glad to specially notice, but want of space compels this omission. The selection by the judges of the chief male representative of Durham Stock,—“Prince of Wales,” owned by Geo. Miller, Esq., Markham, met, we believe, with general concurrence. He is a truly magnificent animal, and we doubt not his owner was well pleased at the honors achieved. The “Prince” won the first prize for Durham bulls for four years old and upwards, \$36,00; first for Durham bull of any age, Association’s Diploma; first for best bull of any age or breed, diploma and silver medal; first for best animal in the yard, male or female, diploma and silver medal; and the special prize, \$60,00, for best Durham bull of any age. Rather a rich harvest for one animal to gather, and when we consider that the competition was lively, that excellent stock surrounded the fortunate competitor, we think a little pride on the part of Mr. Miller was justifiable.

*Devons.*—Passing to the apartment occupied by the Devons a goodly array was noticeable. The friends of this breed were outnumbered by the advocates for large stock, but the fervor with which the claims of the Devonshire representatives were presented make full amends for lack in forces. Beautiful to gaze upon, lithe and active, free from the coarseness too often perceptible in their larger neighbours, why should they not occupy a prominent position among breeders. The entries numbered 99, and some very choice animals were exhibited. John Pincombe, London; Chris. Courtice, Bowmanville; John C. Rykert, St. Catharines, and Daniel Tye, of Wilmott, each exhibited herds, consisting at least of one bull and five cows or heifers. Aside from the gentleman named, E. G. O’Brien, Shanty Bay; John Davey, Leskard; Thos. Allen, Whitby; John Goodall, Galt; J. & H. Spencer, Whitby; Jas. R. Todd, Brampton; Wm. Scott, New Hamburg; Geo. Z. Rykert, St. Catharines; John Moore, Etobicoke, and J. W. Willson, Ontario, occupied prominent positions as exhibitors, and their display reflected great credit upon their skill as breeders, and the kind of stock to which they are devoting attention.

*Heresfords.*—Here the show was light, but 29 entries being made. The breeding of Heresfords, judging from the number of exhibitors, is more limited than in any other description of cattle, there being but two competitors for the Society’s premiums, James R. McMicking, of Queenston, and Fred. W. Stone. Of the stock exhibited we can only say good to fair. There are more friends of this strain of blood in Canada, or else a striking change has occurred within the past five years.

*Ayrshires.*—These beautiful dairy cattle made quite a respectable display both in numbers and quality. The entries were 77, and the stock divided up among a large number of proprietors. Patrick R. Wright, Cobourg; R. L. Denison, Toronto, and John Torrance, Scarborough, each exhibited fine herds. Simon Beattie, and Geo. Miller, Markham; John P. Wheler, and Geo. Scott, Woburn; Hendrie & Co., Hamilton; Joseph Boyle, Flamboro; Geo. Stanton, Paris and John Miller, Brougham, each contributed freely, worthily, to complete this feature of the exhibition.

*Galloways.*—An excellent display of Galloways and Polled Angus, or Aberdeen cattle, was made. The entries were 66, and a very large proportion were choice animals. The prize for a herd was awarded to John Snell, of Edmonton, and their exhibition in the prize ring was quite a novel feature. Jas. Graham, and Arthur McNeil, Woodbridge; A. Nimmo, Kingston; John Fleming and James Sumerville, Vaughan; John Stewart, Waterdown; John McLain, Simcoe; Jas. Auld, Hamilton; Alex. Kerr, London; Geo. Miller, Markham, Jas. Metcalfe, Eglinton; A. Kyle, Ayr, and John Hunter, Exeter, each brought forward good stock. As far as we could ascertain from inquiry, this breed of cattle is gaining friends among the breeders of Canada, and it was urged that among all those who had tested their merits, and had opportunities for developing their peculiarities, they had won their way to favor.

*Grade Cattle.*—In this class some very excellent animals were shown. “Full-bloods” and “Thorough-breds” are in special repute, and the entries were but 52 for Grades. James Bellwood, Newcastle; John Gill, Grahamsville; Jacob Lahmer, Maple; Thos. Stock, Waterdown; James R. Todd, Brampton; Arthur Hogge, Samuel Hodgskin, and Geo. Morton, Guelph; Jno. Ross, Toronto; Wm. Montgomery, Islington; W. D. Jarvis, Etobicoke; Jas. Lowrie, Malvern, and John Randall, Paris, exhibited specimens which should bring Grade Cattle into much esteem.

*Fat and Working Cattle.*—A glance at this section will close our survey of the cattle. The entries were few in each class. The Fat Cattle were certainly oleaginous enough, and as far as stuffing and its results are concerned, those exhibited fairly earned the prizes. Of the working Oxen we cannot speak so favorably. There were a few good yoke, nothing superior was revealed to our examination. There were no entries for the “best team of ten,” with a prize of forty dollars.

*Horses.*—Unfortunately we arrived too late for a thorough inspection of the stables connected with the Society, and such jottings as opportunity afforded are of a desultory character. The stables are close, well barred and locked,—

and horse owners—especially unlucky competitors,—had either removed their animals, or with the keys in their pockets, kept themselves out of sight. Strange is it how soon pride in a horse evaporates when your neighbor eclipses your productions, and the animal which you fondly hoped would receive a prize draws a blank. Horsemen are peculiarly thin-skinned; and after the awards had been declared, doors were slammed to some purpose. When the grand procession of prize animals was in motion, we scanned as fully as possible the representatives of Canadian horsemanship. The number of entries was large,—more than 300,—and we looked for a remarkable display of good points. In some respects our anticipations were more than realized; in others there was an utter failure.

The show of *Heavy Draft Horses* was magnificent,—it could not be equalled on the continent outside of Canada. John Sanderson and Joseph Thompson, Markham; Robert Ferris and William Ritchie, Richmond Hill; John Wilson, Oshawa; John Shedden and James Armstrong, Toronto; James McConnachie, Orono; Wm. Jackson, York Mills; E. Foster, Humber; John Miller, Brougham; Geo. Miller, Markham; J. G. L. Pearson, York; Geo. Scott, Woburn; James Young, Mayfield; John Wilson, Ontario; A. J. Nimmo, Kingston: John Thompson, Whitby, and James Lawrie, Malvern, were among the fortunate possessors of premiums, and their stock was certainly worthy of the honors bestowed. While thus giving expression of acquiescence in the awards, we must not be understood as conceding that the heavy draft horses are all their breeders claim; There is considerable doubt as to their efficiency and utility in comparison with somewhat smaller breeds. The question is a mooted one, and strong arguments can be plied by the disputants.

*Thorough-breds* were in some force, and had their friends, no doubt; yet we would require better samples to arouse our fancy for the class. They may exhibit the "poetry of motion," with jockey mounted and running for a stake; but walking round a ring is a poor way to exhibit action, stamina, or good looks.

*Agricultural Horses* were in goodly numbers, and some very fine specimens were shown. The winners were owned by Thomas Davis, Islington; Hector Scott, Brooklin; James Cowie and Robert Armstrong, Markham; James Ferris, Galt; John Hewer, Guelph; Alex. Burgess, Agincourt; Thomas Teasdale, Grahamsville; K. Graham, Belleville; Geo. Higginbotham, Balsam; Rich. Powers, Columbus; Geo. Alton, Nelson; Thos. Gowland, York; Geo. Scott, Woburn; Chas. Pilkey, Claremont, and Robert Beith, Darlington.

*Matched Farm Horses*.—There were just a dozen span in competition. The successful individuals,—Andrew Allison, Burnhamthorpe;

Wm. Elford, Darlington; John Clarke, Brampton, possessed very excellent horses; but the entries were hardly sufficient to excite close rivalry, or fairly exhibit Canadian farm teams.

*Roadsters*.—Quite a display was made of roadsters; but nothing especially worthy was observed. This portion of the Horse Department was a failure in quality. Rochester, in the essentials, style, and action, can easily eclipse what was presented.

*French Canadian Horses*.—This breed had its representatives, and some of those shown attracted much attention. Their hardiness and power of endurance, together with the fact that "flyers" are frequent among them, entitles the breed to consideration. Did they possess a little easier action and a longer stride, the breed would be much more sought after; but they come toward you like a tornado, evidently bent upon tearing up everything. As a friend expressed himself when viewing a pair under motion, "they are rum 'uns to look at, but good 'uns to go."

*SHEEP*.—Never was there a better exhibition upon the continent in *Long and Middle Woolled* breeds. The entries amounted to more than six hundred in number, and among the animals were very many of extraordinary merit. An attempt to select even those which were deemed entitled to special note, would prove a labour requiring more time than is at our control, and more space than the *Rural* can afford. In this branch of farm industry Canada has ever had precedence, and in the recent exhibition she certainly distanced all competitors.

*Fine Woolled Sheep*.—There were excellent specimens on exhibition, but the paucity of numbers, in comparison with their coarser relatives, was such as to throw them completely into the shade. Quite certain is it that the Canadian Farmer looks for both wool and mutton, (and the present high rates for coarse wools are tending toward a confirmation of his philosophy,) hence Merinos and Saxons are not in general favor. The exhibitors were few—less, we think, than at any time in the past four or five years.

*SWINE*.—Here, too, was a large display. As, though extensive accommodations had been provided on the last day, quite a number of crates still held their occupants in close confinement. All breeds were well represented, and we could not perceive, for the numbers shown, any indications of preference. If there was any material difference the majority was with the small breeds.

*POULTRY*.—The snow of Poultry was good, where numbers are the criterion, and excellent as to quality. In the former respect the Exhibition last year at London was superior. The principal exhibitors were residents of London, and their display indicated considerable of the Chicken Fever in that locality.



**IMPLEMENTS AND MACHINERY.**—While it would be gratifying to make mention of the thousand and one labor-saving implements, and the varied mechanical formations presented, space forbids, at least for the present. Suffice it to say, the Province never appropriated so much credit to itself at any former display of the skill and handiwork of her artizans. Until very recently, the United States has been looked to for supplies in this department, but American mechanics must not allow themselves to stand quiet with the amount of perfection acquired, or they will inevitably be driven out of the market.—*Rural New Yorker.*

## Agricultural Intelligence.

### Agricultural Exhibitions this Autumn.

#### COUNTIES.

North Wellington, at Fergus, Oct. 14.  
West Northumberland, at Grafton, Oct. 15.  
Addington, at Newburgh, Oct. 25.  
West Elgin, at Wallacetown, October 14.  
Norfolk, at Simcoe, October 14.

#### TOWNSHIPS.

Camden, at Centreville, Oct. 18.  
Vaughan, at Burwick, Oct. 30.  
Erin, at Hillsburg, October 16.  
Yarmouth, at Clark's Hotel, St. Thomas, October 14.  
Edwardsburgh, at Spencerville, Oct. 14.  
Asphodel, Belmont and Dummer, at Norwood, October 14.  
Etobicoke, at Islington, October 23rd.

### FOR SALE!

#### Ayrshire Cattle, Leicester Sheep, and Berkshire Pigs.

**THE** Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Specimens from his *Prize Herd* will be on Exhibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.  
Ang. 30th, 1862. 6-mos.

### THOROUGH BRED STOCK FOR SALE.

**THE** SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

## MORETON LODGE NEAR GUELPH, C. W.

### Important sale of Imported & Pure Bred SHORT HORNED CATTLE!

Cotswold, Leicester and South Down Sheep,  
Berkshire and Small White breed of Pigs.

Mr. W. S. G. Knowles, begs to announce that he has received instructions from Fred. Wm. Stone, Esq. to offer

### FOR SALE BY AUCTION ON

WEDNESDAY, 15TH OCTOBER NEXT

At Morton Lodge, near Guelph, Canada West  
Thirty Imported and Pure Bred

**SHORT HORNED CATTLE,**  
One Hundred and Fifty Imported and Pure Bred  
**COTSWOOD, LEICESTER & SOUTHDOWN  
SHEEP,**

Consisting of Rams, Ram Lambs, and Ewes.  
And 25 Berkshire and small White Breed of

**PIGS,** of different ages.

The Short Horns are Imported and bred from some of the most fashionable Herds, such as Capt. Gunter's, Col. Kingscote's Messrs. Tanqueray's Ambler's Bolden's, Sandy's, Jonas Webb's, Smythe Owen's and other eminent Breeders. The Cotswold Sheep are imported, or bred from Imported Stock. From the flocks of Messrs. Ruck, Slatter, Brown, Langston, Gare, Wakefield and other celebrated breeders. The Leicesters imported from Mr. Pawlett's flock, and the Southdowns, imported and bred from the celebrated Buckland and Babraham Flocks of Sir R. Throckmorton and Jonas Webb. The Berkshire pigs, from the finest Buckland Stock. The small Wheat Breed from Capt. Gunter's

Catalogues, with Pedigrees, and other particulars, are now in preparation, and will shortly be issued, and may be had on application to Mr. Knowles, or of Mr. Stone, of Guelph.

Guelph, 8th Sept. 1862.

### THOROUGH-BRED STOCK FOR SALE

**THE** Subscriber has for sale DURHAM and GALLOWAY CATTLE, LEICESTER, COTSWOLD, and LINCOLNSHIRE SHEEP, Male and Female 10 Durham and Galloway Bull Calves—price from \$100 to \$200; 30 Shearling Rams, weighing from 230 to 285 lbs. each—Price from \$50 to \$100 each.

JOHN SNELL,  
Edmonton P.O., C. W.

Four miles from Brampton Station G.T.R.

**TO BE SOLD BY AUCTION,***On Thursday, Oct. 16, 1862,*

**T**HE well-known Herd of NORTH DEVON CATTLE, consisting of more than forty head of Cows, Bulls, and Heifers; one hundred and seventy West and Southdown Ewes and Rams; pure blooded Essex Pigs, in pairs fit for breeding.

Catalogues of description, with pedigrees, may be had fourteen days before the sale, on application at the office of the *Galt Reporter*, if by letter, prepaid. Credit of 12 months may be had on approved endorsed paper.

**THE SPLENDID FARM,**

Consisting of upwards of THREE HUNDRED ACRES, to be sold by private bargain, on accommodat- ing terms.

DANIEL TYE.

County Waterloo, Wilnot, August 1862. td

**THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**The Agriculturist,**

**OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,**

**I**S published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

**Contents of this Number.**

PAGE.

**THE PROVINCIAL EXHIBITION:**

|                                         |     |
|-----------------------------------------|-----|
| Horses .....                            | 577 |
| Cattle .....                            | 578 |
| Sheep and Pigs .....                    | 579 |
| Poultry .....                           | 580 |
| Implements and Machines .....           | 580 |
| Agricultural Productions.....           | 582 |
| Horticultural Products.....             | 583 |
| Arts and Manufactures.....              | 584 |
| Woollen Cloths.....                     | 586 |
| Miscellaneous.....                      | 587 |
| Visit of the Governor General.....      | 588 |
| The Dinner.....                         | 588 |
| Meetings in the Agricultural Hall.....  | 593 |
| Veterinary Lecture by Mr. Smith, V. S.! | 593 |

**ANNUAL MEETING OF THE AGRICULTURAL  
ASSOCIATION:**

|                                                             |     |
|-------------------------------------------------------------|-----|
| Association: .....                                          | 597 |
| Election of Officers.....                                   | 598 |
| The next Exhibition.....                                    | 599 |
| Tribute of respect to the Late Hon. Adam<br>Fergusson ..... | 600 |
| The Close of the Exhibition .....                           | 601 |
| The Receipts and Attendance.....                            | 602 |

**FOREIGN OPINIONS OF THE EXHIBITION:**

|                                        |     |
|----------------------------------------|-----|
| Opinions of the New York "Argus".....  | 603 |
| " " "Rural New York".....              | 604 |
| Agricultural Shows to take place ..... | 607 |

**BOARD OF AGRICULTURE.**

Office in the New Agricultural Hall, corner of Yonge and Queen streets, Toronto.

HUGH C. THOMSON,

Toronto August, 1862.

Secretary.

**FOR SALE.**

**A** LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE

# Canadian Agriculturist.

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, OCTOBER 16, 1862.

No. 20.

## Management of Dairy Stock.

Much of the profit of a dairy cow depends on a plentiful supply at all times of nutritious food. The variety in the quantity of milk they yield, is principally owing to the difference in the nutritive quality of the food they receive. Cows, it is well known, receiving food poor in alimental matter, fall away in milk. Add to the nutritive properties of their food, and they immediately increase their flow. The quantity of milk, then, does not depend on giving a particular kind of food, but on giving a quantity equal to the support of the natural waste of the body, and a remainder to be converted into milk. Farmers err very much when they undertake to keep more cattle than they have means to sustain in the best condition, especially in winter. The result is, their cows come out of the stable in the Spring weak and feeble, and struggle through half the summer before they are in a condition to yield milk in quantity more than equal to paying expenses. Dairy cows should at all times be in good condition. They should receive their food at regular intervals; their milk should be drawn at stated hours, and by quiet gentle milkers; and they should be treated at all times with the greatest kindness. In short every means in the power of the dairy farmer should be used to insure their tranquility.

Harsh treatment also exacts a very injurious action on the milk, rendering it less buttery, and more liable to acidity. Respiration is a

species of combustion. At every breath, we inhale oxygen of the atmosphere, which unites with and consumes the fatty matter of the food. When cows are worried or driven too rapidly, they breathe more frequently, inhale more oxygen, and more of the buttery portion of their food is consumed, leaving less to be converted into milk. Warmth is a substitute, to a certain extent, for food. Hence the importance, in cold weather, of tight building, avoiding cold draughts, with proper attention, however, to effective ventilation. Impure air acts as injuriously on the animal frame as impure or insufficient food. Cows, when warm and comfortable, will consume proportionately less food, and it is well known to all experienced dairymen, that their cows yield more milk in warm pleasant days, or when they have the run of warm well sheltered pasture, than on cold rainy days, or when they run in cold bleak pastures. When cold they inhale more oxygen; the result is a combustion of more of the carbon or oily part of the food, and less remains to supply the lacteal vessels with rich milk.

## Draining and Ashes.

EDITORS OF THE AGRICULTURIST, —In my former letter to you, which you noticed in the *Agriculturist* of the 1st inst., making inquiries respecting irrigation, where I said, "How near together should the drains be where I could not make them more than 16 or 18 inches deep?" You have mistaken my meaning, I ought to have

said underdrains. I had an idea that that part of the ground might be made dry by putting underdrains pretty near to each other, and thus compensate for the want of depth, and I wanted information as to how near they ought to be in order thus to compensate. Would it be any use attempting to underdrain it at all? It is nearly level and lies next the creek, and the flag limestone is very little higher than the bottom of the creek, so that there would be no chance of the water sinking down through any openings that might be in the rock. If the drains were made whenever there would be a flood in the creek the water would go up the drains. Most of the ground appears dry on the top, but it don't grow very much; it is in pasture: another part is in meadow, and lies a little higher, I am making a few underdrains in a part of it, but I cannot get them deeper than about 20 to 33 inches. I intend to try the water on it this Fall.

I am clearing a piece of new land for turnips, to be followed with spring wheat, and grass for the meadow or pasture till the stumps are rotten; is it better to sell the ashes, or spread them on the ground where they are, or rake them up to apply to old cleared land? If the latter be best, to what crops would it be best to apply them? and how,—mixed with other substances or by themselves? "Although the season is over for this year for sowing, yet your answers would be borne in mind by all interested in the subject.

I am, yours &c.,

J. W.

Cambray, 22nd Sept, 1862.

#### REMARKS.

Drains that for want of outfall cannot be made deeper than 16 or 18 inches will require to be near each other; say from 20 to 30 feet according to the nature of the soil and general character of the land. At the above depths drains would be liable to injury by ordinary cultivation, but if well made might be quite secure in pasture. Where stone is of easy access, five or six inches of broken stone placed immediately over the conduit of the drain will be found beneficial. We would suggest to our correspondent the desirableness of having a few surface drains at regular intervals in addition to the underdrains, so as to prevent the accumulation of surface water in spring, when the underdrains cannot fully act till the frost is sufficiently out of the ground.

With reference to the selling of ashes much of course depends on the price they will fetch. As a general rule we think farmers had better apply them to their older lands, which have been deprived by frequent cropping of the in-

gredients which wood ashes possess, and which are essential to the healthy growth and maturity of plants. Ashes may be beneficially sown broadcast on meadow or pasture, or mixed with the compost heap and applied to any of the cultivated crops of the farm. We shall be happy to hear from our correspondent again on the results of his irrigation.

#### The Field Bean and Rotation of Crops.

THE EDITORS OF THE AGRICULTURIST.—Can you favour me with some information about beans. If it be the case, as I am told, that the common bean does not pod in this Province, do you think any of those kinds that are largely imported into England from climates much better than Canada, such as Egypt, Sicily, Brazil, &c., would answer. By a short experience in farming I find I want a drill crop to found a rotation upon, and as turnips, except to a limited extent, are out of the question, I have thought if I could find a suitable bean it would come in as a substitute for a more eligible green crop. Indian corn has been suggested to me for the purpose instead, but from its requiring the same food as the other cereals, it appears to be objectionable. I do not see much said in the Journal about rotation of crops, a subject, judging from the little attention paid to it in general practice, might I think be profitably impressed upon the mind of the farmer.

I would like much to know from some of the more intelligent agriculturists of the Province what kind of rotation they find best, the subject is of so much consequence that a thorough discussion of it would prove highly instructive. A short experience tells me that our great want is manure, both in quantity and quality, and, in order to obviate the evil in some measure, recourse must be had to a scientific and judicious arrangement of the crops, and the application of what manure we have at the best time and in the most proper mode. This latter subject seems at present to be engaging much of the attention of the agricultural chemists in Europe, and as we in the wilds of Canada have not the advantages of reading the important articles which are appearing in the various agricultural journals of the three kingdoms, we must look to the contents of this journal and similar ones published on this continent for an account of the fast progress which is going on in agriculture in the old world, for there the greatest amount of mind is engaged and the most important results are effected.

"No. WEST."

October, 1862.

REMARKS.—The common field or horse bean, cannot, it would seem, be profitably cultivated



in Western Canada. It is raised, however, to some extent in the Lower Province, and also in Nova Scotia and Prince Edward Island, we believe, but with what success we do not know. We have tried, on a small scale, several varieties of the bean from different parts of Europe, including the southern portion, and also Egypt, but the results were not encouraging. Our soil, however, was too dry and sandy for the bean, which succeeds best in Europe, on heavy, moist land. In Canada our summer heat seems to come on too suddenly and intensely for this class of plants; the blossoms prematurely fall off, and consequently do not fructify. This is more or less the case with the broad or Windsor bean, cultivated in gardens, where, under the best advantages of soil and treatment, it is rarely a certain or productive crop. If any of our readers have had experience in the matters referred to by our correspondent we shall be happy to be made acquainted with the results. The question of Rotation is indeed of great importance, and we purpose hereafter to treat it with considerable fullness.

### New York State Agricultural Show.

The annual Exhibition of this important Society took place at Rochester the first week in October, and we are happy to say, considering the disadvantages of bad weather and the unsettled state of the country, was a decided success. A considerable number of Canadians was present, including Mr. Burnham, of Cobourg, the President elect of the Provincial Association, Mr. R. L. Denison, Treasurer, Hon. D. Christie, &c. We find that Mr. George Miller, and other Canadian breeders, carried off several first class prizes. The number of entries was somewhat below the average, but the quality of the stock, particularly sheep,—notwithstanding the absence of some of the best herds of the State, was decidedly good. The locality of Rochester is unquestionably among the very best for holding the State Fair. The *Rural New Yorker* thus sums up:—

The twenty second Annual Exhibition of the N. Y. State Agricultural Society was held during one of the most unpropitious weeks of the season—the morning of every day of the

Fair (and even of the day preceding its opening) being stormy or portentous of rain, just the weather or indication, to keep people at home. The sun was visible but a few hours from Monday morning until the close of the Fair on Friday, and more or less rain fell on every day of the exhibition. And yet the Fair was a grand success—an unparalleled triumph, in all respects, considering the unfavorable weather and condition of the country. The result is the more gratifying from the fact that many had predicted a failure, even with fair weather, and had seriously urged a postponement. Under the circumstances the Agricultural Society and People of the Empire State may well send cordial greeting to brother Producers and Unionists of the Loyal States, and also cite Secessionists everywhere to the result—as evidence that New York can not only do its full share towards suppressing the rebellion, but also exhibit undiminished zeal and energy in maintaining and advancing her Home Interests. Had the weather been favourable we doubt not the Fair would have proved the most successful, *in every respect*, ever held in the State—and that is equivalent to saying in the Union. The simple fact that the receipts were about \$11,000—some 3,000 more than last year—tells the whole story as to the location of the Fair and the effects of the war upon the material interests of the State."

In fruits and flowers this exhibition far exceeded any of its predecessors, arising no doubt from the peculiar advantages of the locality, and the great abundance of the season. The vegetable department appears to have been comparatively neglected, a serious imperfection, which our New York friends should, as they readily can, correct for the future. The arrangements for the fruit were somewhat novel, and appear to have been both convenient and attractive. We subjoin from the *Rural* a description:—

The fruits and flowers were exhibited in a fine oval tent, 85 feet in width by 110 in length. About twenty feet at one end was left for entrance and exit, and from this a table four and a half feet in width extended entirely around, making some 300 feet in length, containing about 1400 square feet, and this was devoted to fruit entirely. Fifteen feet inside of this was another table of the same width forming an oval, designed for flowers. This table was covered with moist sand four inches deep, and over this was placed sheets of moss, covering the whole surface. In this was placed cut flowers, so that there was no necessity for vials, which are constantly falling over, and are always a

great annoyance. Plants will keep well in sand and moss any reasonable time, and a slight sprinkling may be given if the weather should prove dry and warm. As guards around these tables a neat rustic fence was made of white cedar poles, with necessary gates for exhibitors, &c. This left a space in the center about forty by sixty feet, in which were the two masts or poles that sustained the top of the tent. These masts were covered with bark, so as to give them the appearance of trees, and pots of climbing plants in flower sunk at the base, while their branches extended nearly to the top. At the base of these poles octagon stands were made for the display of pot plants, covered with moss, and when filled with plants, produced a very fine effect. In the centre of the oval was a large bed of *Cannas* and *Celadiums*, and nothing in the whole exhibition was more admired than the splendid foliage of these plants. This bed was raised something like a fort, and surrounded with moss-covered rocks selected from the river bank. Scattered around where a few fine plants, such as the *Sago*, *Palm*, *Century Plant*, *Euphorbia*, &c., the pots and boxes concealed by rocks and moss. The turf was short and of good color, and the whole appearance was that of a fine lawn.

We are glad to learn that the able and courteous Secretary, B. P. Johnson, Esq., had returned from his visit and duties connected with the great International Exhibition in good health and spirits, full of hope and generous feelings both as regards the old world and the new. Although, as under the circumstances was to be expected, the amount of the United States contributions to that magnificent display of the world's art and industry, has been comparatively small, it must be gratifying to her enterprising and intelligent citizens that their importance and particular value have been appreciated in an unmistakeable manner. Let us hope, ere another New York State Show occurs, that swords will be transformed into ploughshares! We gladly make room for the following lecture and discussion in connection with the State Fair.

INSECTS INJURIOUS TO AGRICULTURE.—*The Grain Aphis, Wheat Midge &c.*

Dr. Asa Fitch, Entomologist of the State Agricultural Society, opened the discussion by reading the following Essay on the Grain Aphis.

Mr. Chairman and Gentlemen,—I am requested to preface the discussion, this even-

ing, by presenting to the audience some account of the Grain Aphis—an insect new to us in America, and which during the past and the present year, has been more prominent in the public regard than any other insect.

In the grain fields of Europe this grain aphis has existed from time immemorial. It was scientifically named and described eighty-one years ago, by the distinguished German entomologist, Fabricius, who met with it in fields of oats, and therefore named it the *Aphis Avenæ*, or the oat aphis, he being unaware that it occurred equally common upon other kinds of grain also.

But our European accounts of it are quite meager and imperfect. About all that we gather from them is, that it is an insect which shows itself upon the grain about the time of harvest, and that in some instances it has been known to be so multiplied, in particular places, as to literally swarm upon and cover the heads of the grain in many of the fields.

These few general facts, are all the information which the world has hitherto had of this insect. What becomes of it during the remainder of the year, where, and in what condition it lurks after harvest time, and until harvest time again approaches, had never been investigated. It was remaining for us in this country to trace out its abiding place and habits during the autumn, winter and spring, and thus complete its history the year round, as we have been able to do within the past eighteen months—under the instructions of this Society, and under the auspices of the State of New York.

In this country, this grain aphis has never been observed, and it was not known that we had such an insect here, until last year, when it suddenly appeared in excessive numbers over all the New England States, and the State of New York, except here in its western section, and also in the adjoining districts of Canada and of Pennsylvania. Throughout all this vast extent of country every grain field was invaded by it; many of these fields were thronged and a portion of them were literally covered and smothered by this insect.

This year it has moved westward, making its appearance in the same manner all over Western New York, Canada West, Northern Ohio, and at least a portion of Michigan, as I judge, from the numerous letters which have been sent me with grain-heads containing this insect, and from the notices of it in the public prints—whilst at the East, where it was so numerous last year, it has measurably disappeared this year, so that, except in a few localities, it would not have been noticed had not every body been so eagerly searching for it.

But though this insect has only been notice-



ed in this country the past and the present years, we do not suppose it has newly arrived upon this Continent. It has no doubt been present in our grain fields heretofore; but in such limited numbers, and so scattered about upon the growing grain, that it failed to be observed. It is seventeen years ago that I began to examine the wheat midge, and in looking at that and other insects upon the wheat, I recollect I have occasionally seen this aphid. But as only two or three individuals of this kind were to be found at a time, I supposed it to be of no importance, and thus gave no attention to it, until it began to appear in such abundance the past year.

Although it is a common habit of plant lice to become extremely numerous, at times, upon the particular kinds of vegetation which they respectively infest, we meet with no recorded instance in which one of these insects has been known to become so suddenly and excessively multiplied over such a vast extent of territory as has happened in our country with this grain aphid the past and present years.

I suppose almost every person in this audience has seen these insects, crowded together upon the heads of wheat, oats, barley or rye, and has observed that they are a kind of plant-louse, similar to what we frequently see upon the leaves of cabbages in our gardens, and on the apple, the cherry, and other trees. As it resembles these common and well-known insects so closely in its form, its motions, and habits, it will not be necessary for me to give any particular description of it.

With regard to the mode in which it injures the grain, I would observe that it has a slender, sharp-pointed bill or trunk, which it holds under its breast when this implement is not in use. With this it punctures the leaves and stalks of the grain and sucks their juices. It therefore has no occasion to leave the particular plant on which it is born, as it always has an ample store of nourishment directly under its feet. Hence, it has no use for wings to carry it, like other insects, from place to place in search of food. It needs wings for only one purpose, namely, to enable it to emigrate to fields of grain which are unoccupied, in order to start colonies in them. Only a small portion of these insects, therefore, acquire wings; and these fly away from the winter grain to plant their race upon the spring-sown wheat and oats.

The latter part of June, when the grain has advanced so that the heads or ears begin to put forth, two most remarkable changes occur in this insect, whereby it appears to become another creature, a different species, in the middle of summer from that which is seen in the spring and autumn.

One of these changes is in its habits. Be-

fore the heads appear, it lives singly, scattered about upon the leaves and stalks of the grain, and the young lice, as fast as they are born, leave their parents and wander away. But no sooner are the heads protruded from their sheaths preparatory to blooming and growing the kernels of the grain, than this aphid wholly forsakes all the other parts of the plant and becomes congregated upon the heads—evidently because the juices which the plant elaborates for the growth of its flowers and seeds are much more nutritious, more dainty and palatable to these insects, than are the juices which circulate in the leaves and stalks. They here fix themselves upon the base of the chaffs which envelope the kernels, and inserting their beaks, they suck out the juices which should go, first, to grow the flowers, and after that to fill and perfect the kernels. And now, the young lice which are born, instead of scattering themselves and travelling away, settle down closely around their parent, crowding as compactly together as they can stow themselves. Thus it comes to pass, that when these insects are numerous, as we have recently had them, in many of our grain fields, scarcely an ear can be found which has not a cluster of these lice around the base of almost every kernel, all with their tiny bills inserted therein, pumping out the juices which should go to swell and perfect the seed. Thus, this grain aphid from being a solitary insect, wandering about singly upon the leaves and stalks, becomes a gregarious insect, clustered together in flocks, and remaining fixed and stationary upon the lower or butt ends of the kernels.

At the same time, another change, equally remarkable, takes place in the color of these insects. So long as they nourish themselves on the course juices of the stalks and leaves, their bodies are all of a grass-green color. But when they come to feed on the more delicate juices of the flowers, they begin to bear young of an orange color. One of the grass-green insects having stationed herself at the base of a kernel, the next day, in the group of little ones around her, a yellow one will occur, all the others being green like their parent. A day or two later, as the nourishment she derived from the leaves becomes more dissipated from her body and replaced by that now obtained from the kernels, half the young she produces will be of this yellow color. And still later, all the young are yellow, no green ones being any longer born. And the older ones after a time dying and disappearing, all these insects some weeks before harvest time, become changed to a yellow color, their hue inclining more to red in some and to yellow in others.

It is truly curious that this green insect, thus, on coming to feed on the juices which

grow the flowers, begins to produce young of a gray yellow color similar to that of the flowers.

By depriving the kernels of a portion of the milky juice which should go to swell and mature them, this insect causes the ripened grain to be more or less shrunken and light of weight.

Rye, however, grows so rapidly and ripens so early, that it outstrips this aphid in its increase, and thus sustains no material injury from it. Winter wheat, ripening more slowly, experiences more injury. But the crops which ripen latest, and when this aphid has become multiplied to the greatest extent, namely, spring wheat and oats, become the most thronged and sustain the greatest injury.

Let us next inquire how it is that this insect is able to become so suddenly and so excessively multiplied as we have had it, in the Eastern part of our State last year, and here in its Western part this year.

I may observe that a hundred years ago it was a current opinion among men of science, that certain insects and other creatures pertaining to the lower orders of the animal kingdom were generated spontaneously. But, more recently, when these instances of supposed spontaneous generation came to be closely investigated, one after another of them were found not to be such. So that at this day the scientific world wholly discards the theory that there is or can be any such thing as spontaneous generation. All living things descend from parents; and it is by a pairing of the sexes that young are produced and that each species is continued in existence—some classes of animals bringing forth their young alive, others laying eggs from which their young hatch.

Insects are of this latter kind. They are all produced from eggs. But in the generation of the plant lice, we meet with one of the most remarkable anomalies which we anywhere find in the works of nature. These insects bring forth their young alive, at one time, and they lay eggs at another time. All the plant lice which we see upon our fruit trees during the summer are females, and these do not produce eggs, but living young, which mature in a few days, and (wonderful to tell!) they are fertile without any intercourse of the sexes. It is only when cold weather and frosty nights arrive, that males are produced. The insects then pair, and the females thereupon lay eggs. These eggs remain through the winter, to be hatched by the warmth of the following spring. The young from these eggs grow up and commence bearing living young, no males and no eggs being produced, except as the closing act of their operations in autumn.

Such are the general facts with regard to the generation of the insects of this aphid group. And I had supposed it would be the same with

this grain aphid. Some of you may have been present and heard the remarks which I made on this subject at our Fair at Watertown a year ago. I stated that the eggs of this insect would probably be found late in autumn, scattered about upon the leaves of the sowed wheat and rye—which eggs would hatch with the warmth of the following spring, to start the insect upon the grain again this year. But when frosty nights arrived last autumn, and when the aphid on the apple trees was found paired, and the females were busy depositing their eggs, to my surprise, nothing of this kind occurred with this aphid upon the grain. The mature lice continued to produce young ones, until they and their young became congealed upon the leaves of the young grain by the advancing cold of the season. And in this state they were buried beneath the snows of winter, and with the warmth of the ensuing spring they were thawed, and returned to life again.

To be better assured upon the subject, I placed some of these insects on grain growing in flower-pots and kept during the winter in a warm room. In this situation they continued alive and continued to bear young through the whole winter season.

Thus I have watched this grain aphid for a year round so closely, that I am perfectly assured no eggs were laid and no males were produced. Occasionally an individual was noticed, varying somewhat from the others, and which I have therefore suspected might be a male; but, on imprisoning such specimens in vials over night I have invariably found young lice with them next morning.

When, and under what circumstances males occur, is yet remaining to be discovered. At present it seems as though these insects might go on forever, producing young, without any intercourse of the sexes.

Finally, with regard to the fecundity of these insects, I would state that those which have no wings, and which remain on the stalks of grain on which they are born, are much more prolific than those which have wings and wander abroad. By enclosing them separately in vials, I found the winged females quite uniformly gave birth to two young lice in a single night, whilst the wingless ones produced four in the same time. We frequently see young lice produced in the day time, but fewer appear to be born then than during the night. The winged ones are also much slower in coming to maturity. I placed several young lice the morning after they were born upon some grain growing in a flower-pot, and on the third morning afterwards I found four little ones around each of them, showing that the wingless ones come to maturity in three days. It will thus be seen with what prodigious rapidity these creatures multiply. They almost double their numbers daily. A single one producing four young daily, and these becoming equally prolific when they are three days old,



her descendants in twenty days if all alive, will number upwards of two millions. This will serve to explain to us how it is that this insect becomes so excessively numerous upon the grain at harvest time as we have seen it.

As they multiply so rapidly, it is evident no vegetation which they infest would escape destruction from these plant lice, if nature had not herself provided most efficient means for checking and subduing them. We accordingly find that these insects are preyed upon and consumed by other insects, to a greater extent than are any other kinds of injurious insects wherewith we are molested. There are whole groups and tribes of predaceous insects which subsist exclusively upon the plant lice of different kinds.

A tribe of very small Ichneumon flies, named *Aphidius*, are parasitic destroyers of these insects—puncturing and thrusting an egg into the body of the aphid, from which hatches a minute worm which feeds within the aphid till it kills it. I have found two species of these parasites destroying the grain aphid.

Another most efficient destroyer is the Lady Bug or *Coccinella*, of which there are numerous species all of which are continually searching plant lice to feed upon, these being the sole nourishment of the lady bug, both in its larva and its perfect state.

In addition to these are the *Synphus* flies, the golden-eyed flies, and the laced-wing flies, all mortal enemies to the different kinds of Aphid.

By such means is it that these plant lice upon the grain as on other vegetation, are usually but a transitory evil—these their foes and destroyers, always gathering around them wherever they become numerous, and multiplying until they overbalance and subdue them.

Some one asked for a description of the Lady Bug. Dr. Fitch described it as follows:—It is about the size and shape of half of a small pea, of a yellowish red color, with round black spots upon it.

*Question.*—Is it poisonous to animals?

Dr. Fitch knew a single instance when swine had been pastured in a field where the lady bug was numerous. All of the herd were taken sick and some of them died. The swine were removed from the field to another, and such as were so removed recovered. Dr. F. said that it was possible that the swine were poisoned by large quantities of the lady bug; for if it is taken on the fingers and crushed, an acrid juice is emitted, which is doubtless poisonous, inasmuch as it is the insect's only means of defence. He had thought it possible that this particular herd of swine might have been poisoned by it.

*Question.*—Is there any prospect of the Aphid becoming a permanent pest in the country?

*Answer.*—I think not. Its enemies are too numerous for that. Not more than a single year at a time, will they be likely to ravage in

a single locality. As before said, they seem to be emigrating Westward.

*Question.*—Is the midge a permanent pest; is it plenty here at all seasons?

*Answer.*—There is no doubt that the midge is plenty in all parts of the country. The character of the season governs its ravages. If the latter part of June is wet, look out for the midge; if dry, there is no danger. In dry weather it cannot subsist on the uplands; it returns to the lowlands.

T. C. Peters—We are fast reaching the maximum of former years, in the amount of wheat sown in Western New York, and it is an important matter to us to know how to avoid the ravages of the midge. Do you recommend thorough culture?

Dr. Fitch—Strong growing wheat will produce despite the midge. Yes, I do recommend thorough culture as one of the preventives of the ravages of the midge; also of the Hessian fly and other insects.

*Question.*—What is the effect of the work of the Aphid upon the grain—upon the kernel?

*Answer.*—The insect extracts the juices from the plant, which aid in developing and maturing the kernel. This diminishes the size of the grain—sometimes virtually destroying it, for the substance is almost gone.

Mr. Geddes, of Onondaga, does not agree with Dr. Fitch concerning his theory, with reference to the existence of the midge. He doubts if the midge exist in as great numbers one year as another, or if they are present at all; for prior to the last six years he had failed to get a crop of wheat for some years on their account; while the past six years he had grown it successfully. His success, he thinks, is not due to dry June, but to the fact that the midge had disappeared. He doubts, too, if his success is due to superior culture; for he used to summer fallow all his land; now he turns it over and seeds after barley, and oats &c. &c.

T. C. Peters—So far as white wheat is concerned, the theory of the effect of the season upon the ravages of the midge upon it, is correct. But the Mediterranean is the only variety that can be grown now safely. He thinks the white wheat has very much degenerated.

Other gentlemen present coincided with him in this matter and united in asserting that the best mode of redeeming white wheat was to change the seed. It was further agreed that the Mediterranean had greatly improved by cultivation—that it was "bleaching out."

Mr. Bishop, of Wyoming, asked if early or late sowing had not had to do with checking the ravages of the Aphid?

Dr. Fitch replied, yes. Its ravages are greatest on the late sown wheat. Late sowing is not advised, if the object is to avoid its ravages. The same remark applies conversely to the midge. It does not so seriously affect the late, as the early sown wheat.

Pres't Cornell—Have you observed the Ap his in the ground around the roots of the barley?

Dr. F. had so discovered it.

Mr. Geddes—Why is it that the midge should have appeared one year, and not doubled the second and tripled the third, &c., &c. He thought the midge was disappearing.

Dr. Fitch said there were two successive years when the midge disappeared, and then the third year appeared again, and was very destructive. He does not think it was because the midge passed away from the country, but because the season was not favorable to its development—or at least not favorable to its operations on wheat—it passed to some other grain.

At this point there was a rambling conversational discussion upon the relative value of different varieties of wheat. Much of this the reporter was unable to hear. But he heard enough to establish the fact that there were many present who believed the Mediterranean the safest and best wheat to sow; that it was improving in character, while the white wheat of the Genesee Valley was deteriorating. A few claimed that better flour could be made from the Mediterranean than from any other wheat.

### Fat versus Lean; or the Obese System of Feeding Cattle.

In this article we propose offering a few desultory observations on the question, Has the obese system of fattening cattle, as practiced for upwards of half a century, and which is still the fashion, a tendency to increase the normal proportions of fat, but decrease that of lean, and without increasing the carcase-weight of animals? Speaking from memory, the object of the Smithfield Cattle Club is *'To produce the greatest possible amount of meat of the best quality at the lowest price.'* Such being their proposition, the remarks we are about to make will show, that by encouraging the production of an excess of fat, the greater portion of which goes to the tallow-chandler, the lean meat, available for the food of man, has been decreased below the normal standard, both as to weight and quality. And if we shall succeed in proving this, the reader will readily perceive that the Smithfield Cattle Club are not performing the functions for which they were constituted. The Royal Agricultural Society of England, the Highland Society, and the other societies, both for breeding and fat stock, are in a similar position, the general practice pursued having a tendency to increase fat, but decrease the weight and quality of lean.

It may be as well in this place to mention, that our object is to induce the Smithfield Club, and other fat-stock Clubs and Societies, to take the necessary practical steps for encouraging the opposite practice, viz., the growth of rich juicy lean meat in greater abundance, with no

more fat than is necessary for health and domestic economy. In other words, *LEAN versus FAT; or the natural system of feeding cattle.* But to the solution of this latter problem we shall have to return in a subsequent article. For the present we have enough on hand to dispose of the opposite problem at the head of our paper, viz., *FAT versus LEAN; or the OBESE SYSTEM OF FEEDING CATTLE.*

*What is fat?* The printer has one answer to this interrogatory and the farmer has another; but we shall have to take up the question in a somewhat different light from either, with a view to determine the function fat performs in the animal economy, and the purpose it serves in the dietary of man and cattle.

Although considerable attention has already been paid to the chemistry of animal fats, as of the ox, sheep, and pig, yet much remains to be done to supply the growing demands of physiology. These fats are regarded as having a true saline composition, consisting of stearic, margeric, and oleic acids, and a common base glycerine, thus forming stearine, margarine, and oleine. But it is a well-known fact, that each of the above fats, viz., ox-fat, mutton-suet, and hog's-lard, is associated with other proximate principles, and that a knowledge of these would be of more importance to the physiologist and farmer, and also to the physician, than a knowledge of those usually specified by chemists. Thus "mutton-suet consists of stearine, margarine, oleine, hircine, and hircic acid" (Reveira,) and most probably other flavouring matters than the latter two, as the taste of the suet is always more or less affected by the quality of the food on which the sheep had been fed. Thus the suet of the sheep fed on rich down or hill pasture is finely flavoured, while that fed on oil-cake is the reverse. Similar diversities in the quality of food produce corresponding effects upon the taste and flavour of ox fat and hog's-lard.

"The fat, considered physiologically," says Dewglison, "has for its function to protect the organs, maintain their temperature, and to serve for nutrition in case of need, as is observed in torpid animals." According to this writer, its functions is thus of a threefold character. In a normal state of health and weight, for example—first, so much fat is necessary to protect the organs; and, secondly, so much is required to keep up the temperature of the body.—For both these purposes a daily consumption of fatty matter may take place, and such will be procured directly from the food if it contains so much. But, in the third place, when the food contains more fat-forming elements than are required for the above two purposes, a reserve of fat is stored up in the adipose tissue to supply the demands of the system in the emergency of none being obtained from food, as in the case of hibernation, when animals sleep during winter in a torpid state; or



in the case of fasting during seasons of scarcity, as in winter in this country, and in periods of drought experienced by the fat-tailed sheep and humped-ox of East Africa, where we see nature making ample provision for peculiar exigencies of this kind.

In the case of fat-tailed sheep and hibernating animals, the accumulation of fat is natural; so that the normal health is not injuriously interfered with. But the reader must be well aware that unnatural practices are resorted to, in order to produce an accumulation of fat in our domesticated animals—as in the cramming of geese, blinding quadrupeds, &c., &c., when an abnormal state of health is experienced in various forms; as, for example, of obesity, rot, &c., &c., &c. It is to the principles involved in the abnormal cases that our observations will be chiefly confined, viz., to an excess of unhealthy fat, a decrease of lean, and an excess of water and bad fat, as in the fatty stage of sheep rot, &c., &c.

In the process of fattening geese (to obtain the *foie gras* of the French) by cramming with fatty food, in that of fattening women for harems in Turkey on *flour and honey*, in sewing up the eyes of the cattle in the East, or in fattening them in dark warm places and on improper food in this country, similar principles are involved. Sleep, or a state of the system similar to it, for instance, is induced. The number of respirations in a given time is thus lowered, and consequently the consumption of fat-forming element. The active functions thus concentrate their energies, as it were, almost wholly to the formation of fat of an inferior quality. And as the rule holds good in this as in all other mechanical questions, it consequently follows that nervous and muscular action cannot take place but at the expense of matter. Now, in the case before us, the expense of matter is reduced to its natural minimum; thus leaving a much greater surplus than in ordinary cases to be stored up in the adipose tissue. And more than even this surplus goes to increase the weight of the carcase; for in cases of obesity the excretory functions seldom remove the whole of the refuse of the system that does take place; so that this has also to be added to the coarse fat, to swell the total weight of inferior meat sent to the shambles.

In the forcing system of oilcake-feeding cattle for the shambles now generally pursued, the above principles are carried out, although not perhaps to the same extent as in cramming geese or in fattening some special animals for Christmas fat-stock shows. In the former case, however, the principle is as objectionable as in the latter, for a very large proportion of the heavy meat about this season is by far too fat, even after the butcher has pared off tubfuls of rough fat for the tallow-chandler; while the fat that goes with the lean is of a very inferior quality, being often unfit for human food. Turcips and

oilcake are not the natural feeding materials of our cattle; and when animals are allowed, and even induced to eat large allowances of either, the appetite being depraved or voracious, but especially of the latter, oilcake for oxen and sheep, and barley-meal for pigs, &c., &c., under confinement, and with a limited amount of light and fresh air, sleep is induced; while the same abstraction of certain functions, and contraction of others, take place, in order to liberate the blood of fat-forming element, and to deposit it in layers and patches separately from the lean, as in the case of geese, Turkish women, or other examples of obesity. In the case of breeding stock it is much worse than this, obesity having a stronger tendency to become hereditary in the breed. So that the obese system as exhibited at and encouraged by the summer meetings of the Royal Agricultural Society is tenfold more objectionable than it is at our Christmas fat-stock shows; for when obesity becomes hereditary in breeding stock, it is hardly possible to prevent even milch cows from becoming too fat when full fed, while if they or their offspring are stinted in their daily allowance, skin and lung diseases are the inevitable results.

This extra-fat system is, in the second place, diametrically opposed to the growth of lean meat. The sleepy dulness and peculiar state of the nervous system generally attending the deposition of extra quantities of fat under obesity, in any of its stages, not only prevents the development of muscle or lean meat, but even has a tendency to produce atrophy, or wasting of the lean. Indeed it always does so, when animals are allowed to lie too much with overloaded stomachs. And such is the extent of atrophy produced in some animals that, when they continue to lie upon one side for a length of time they frequently become unable to rise and stand upon their feet. The details of the physiological *rationale* of this we must postpone to another article. At present it will be sufficient if we merely mention that this waste indirectly arises from the want of the necessary amount of exercise, light, and pure air, with a proper supply of natural food to maintain the equilibrium of live muscle. The lean of meat undergoes changes in the animal economy, to which the fat is not subject. The latter is deposited in small vesicles, or sacs, there to remain in store until required for use when the supplies from without (in the food) begin to fail; but the former is subject to a continuous pulling-down and building-up, or reparative, process; and unless both these processes take place in a proper manner, the healthy development of lean meat cannot take place. The blood, (both venous and arterial), lymph, and juice of the flesh must also be in a normal state of richness and purity. Now in the case of obesity under this example, where the excess of water is removed from the system, in contradistinction to

the next, or third, example, where an excess of water, along with an excess of fat, is formed, the above conditions necessary to the healthy development of lean meat are not present, but the contrary; for the blood, lymph, juice of the flesh, and the pulling-down and building-up process of the tissues, are all in an abnormal state, being more favourable to atrophy than to growth of tissue and the filling up the flesh with rich juice. Under such circumstances, it is not, therefore, surprising that extra-fat animals are devoid of muscular energy, and unable to endure fatigue; for all those muscles engaged in their locomotion are reduced in tone and strength to what they were at a previous period, when carrying less superfluous fat. The extra weight of fat is sometimes erroneously said to be the cause of this muscular debility; and no doubt, to a certain extent it is so, while it at the same time unfits animals from walking long distances, owing to the manner in which it affects respiration. But this is not the real cause, for the heaviest animal does not always experience the greatest amount of muscular debility. On the contrary, it will be found, when practically examined, that muscles have actually lost volume and contractile force, being thus less able to perform their respective functions.

In the third example, water accumulates in the system as well as fat. The fatty period of sheep-rot is a familiar instance of this kind; but an extreme one. Amongst the extra fat stock exhibited at our fat shows, and also at our weekly markets, there are numerous examples of this kind. The colour of the meat depends something upon how the animal "dies," technically speaking; but generally it has a florid red and watery appearance. The percentage of water may not perhaps much exceed what was found in the lean of beef, by Brande 74, Schlossberger and Berzelius 77; in mutton 71, by Brande. But the juice of the flesh is thin, being deficient of osmazome, albumen, and other elements, that give it consistency and richness of flavour; consequently, although it may be tender, it is soft, watery, and insipid, requiring lots of artificial sauce and condiments to season it in the cooking and eating. The blood and lymph are in a similar state of tenuity. When the several fluids lose their normal state of equilibrium, endosmoses and exosmoses take place, as seen in the advanced stages of sheep-rot.

This abnormal condition is evidently a species of disease, and when animals labour under it, they have a very dull and languid appearance, while their meat is very unwholesome, and unfit to be used as food. Obese barley-meal fed pork may be white, and so may the fat of the ox and sheep; but this is only an evidence of its unwholesome character, for meat deprived of its colouring matter is indigestible.

We have thus arrived at not a very favourable conclusion relative to the quality of the

extra fat meat now exhibited at our Christmas fat stock shows, and of the breeding stock exhibited at our summer meetings. In short, the forcing system of feeding cattle is objectionable. Had the animals shown in Baker Street, for example, at Christmas, 1861, been slaughtered on the spot, and their carcasses exhibited, as they generally have by this time been by the butchers who bought them, would not the exhibitors have been ashamed of the quality of the meat? And would not the vast concourse of visitors have turned up their noses at the smell, and ridiculed the very idea of using for twelve months consecutively no other quality of animal food? And, if an affirmative answer must be given to questions so plain, the conclusion, as to the general principles which such a practice of fattening and breeding stock involves, need not be repeated in this place. Many important advances have been made in every branch of applied Science since our Agricultural Societies and Clubs first entered upon the discharge of their respective functions, and we hope they will, during the current season enter upon one of international significance with an honourable sense of the fresh duties which the progress of things thus calls upon them to perform. During the past half century we have learned to grow fat in overflowing abundance; but, unfortunately at a very heavy sacrifice of lean meat, and even of the quality of the fat itself. This reduction in the growth of lean has, of course, greatly increased the proportion of fat; for, had the growth of the former kept pace with that of the latter, then there would have been but small reason for complaint. And, besides this, a great waste of the most valuable elements of food takes place under the obese system of feeding cattle; but to this we must return.—*Farmer's Magazine.* W. B.

### Directions for the Cultivation of Flax.

The Jacques Cartier Agricultural Society of Canada East, have issued the following directions for the cultivation of flax:—

*Soil.*—The best land for flax is a dark coloured loam with a clay subsoil: it will grow on almost any soil, but such as contain a large portion of vegetable matter in their composition are undoubtedly the most proper for flax; but whatever be the kind of soil, it ought to be in neither too poor nor too rich, but what is called in good condition.

*The place of flax in the rotation of crops.* If the crop is to be allowed to ripen its seed, it should be considered as a grain or exhausting crop, and as a green crop when the plant is pulled green: if intended to ripen its seed it should follow potatoes, turnips, or some other green crop; if to be pulled green, it should then be sown upon land from which one crop of grain only has been taken after



having been several years in pasture; in either case this will cause no derangement on a farm where a six or seven years' rotation is practised in the first case, grass seed should be sown with the flax and in the second should take the place of a green crop, and may be followed by barley or wheat, if allowed a slight dressing or manure after removing the flax.

**Preparation of the Soil.**—In all cases the land should be deeply ploughed in autumn into ridges ten or twelve feet wide, well water-furrowed; this done in the proper season, in a proper manner, the frost of the winter will put the land in a finer state of pulverization than any other implement man can employ; the land should be well harrowed before the seed is sown, then cover the seed by passing the harrow a couple of times over it, water-furrow the land, and remove all stones which remain on the surface; this finishes the seed process.

**Time of Sowing.**—From the 10th to the 20th of May is the best time in this locality; if sown earlier, the seeds of annual weeds will spring up with the flax, and will either injure the crop, or cause more labour in weeding it, whereas if sown about the middle of May, a great number of the seeds of weeds will have already germinated, which the process of weeding will kill, and consequently save labour in weeding.

**The Quantity of Seed.**—This will depend upon the intention of the crop; when a crop of seed is intended to be taken, thin sowing is preferable, but it is a mistake to sow thin when flax is to be taken for the crop; it will grow coarse and less productive; from a bushel and a half to a bushel and three quarters should be sown per acre.

**The Choice of Seed.**—It should be weighty, of a bright brownish colour, and slippery to the feel in putting the hand among the seed.

**The Manner of Sowing.**—It is always sown broadcast, but if seed is the main object, drilling may be adopted.

**After Culture.**—This consists chiefly in weeding, but sometimes should commence with rolling the surface when the soil is very dry, the season advanced, or the earth very light and porous. The weeding, if required, should be done when the crop is about four or five inches high; there is no danger of injuring the plants by walking over them to pull out any weed that may have grown up with them, or even by turning a flock of sheep amongst it, as the sheep will not taste the young flax plants, and a fine dewy night will put all wrongs right; the rest, until harvest, is in the hand of a beneficent Providence, who alone can bring to a successful issue the work of our hands.

**Harvesting the Crop.**—The flax crop is taken by pulling; this should never be done

before it comes into flower, when fibre is the sole object; or before seed in the pod acquires a brownish colour, when fibre and seed jointly are required.

**Rippling.**—This is the next operation, and may be quickly done by presenting the seed end of the flax to the cylinder of a threshing mill, withdrawing the stalks, and binding them in bundles for the purpose of steeping. The best water for steeping flax, is clear, soft, and in standing pools; the time it should remain in the water will depend upon the nature and temperature of it; the most certain rule by which to judge when flax is sufficiently watered is when the reed becomes brittle, and the bark separates easily from it; it must then be taken out of the water and spread very thinly on the ground in regular rows; when it has become perfectly dry, it may then be bound up in bundles and either carried to the scutching mill, or stored away under cover, where it may remain for years without injury to the fibre, if kept dry. The other processes to which flax is subjected before it is converted into thread or linen, belong rather to the manufacturer than to the farmer.

### Short-Horn Breeding.

We have frequently in these notes had occasion to speak of the principle of selection exhibited in mixed blood, or in other words, the combination of good families of all sorts, as lying at the very root of sound breeding, and as being its real purpose; we have also stated, as a fact at once arising out of this fundamental law and proving, that what is expressively denominated "distinct blood," of which the short-horns of Bates and Booth are signal but not exclusive examples, is the result of persevering selection, which ever has been and ever will be associated with the cultivation of the finest animals. "Distinct blood" is selected blood which has become distinguished in the hands of certain successful breeders. "Anybody" (as it was observed in these columns a few weeks ago) "may be a follower of a distinguished breeder; but to be a successful imitator of him not only implies a recognition of the great principle of selection by which all eminent breeders have invariably shaped their course, but involves the necessity of occasionally deviating from the most satisfactory practices; just as they deviated; in order either to maintain what has been accomplished, or to accomplish and secure something still better. It is thus that our leading short-horn breeders, without exception, acted, in their best days. Careful selections and thoughtful combinations of materials that seemed worthy, whatever their source, preceded success, and were among the chief conditions of it." The history of Killerby and Warlaby confirms the general practice. We propose, on the pre-

sent occasion, to trace that history, with as much particularity and attention as time and space will permit, with reference to selection as the chief means of attaining excellence; and shall avail ourselves of an early opportunity to enter upon a similar engagement with respect to the blood of the Kirklevington short-horns. Neither Mr. John nor Mr. Richard Booth achieved renown by ways that are inaccessible to other breeders, nor did either of them achieve renown by methods that are not deserving of universal imitation. The servile submission of will and judgment of the authority of a name and the imperious demand of fashion, by which the fitful and frivolous career of some of their admirers has been more or less characterised, is not to be charged against them. They adopted the labors of predecessors and contemporaries, cheerfully and freely; but they adopted them at the same time deliberately and independently, using them, not as denoting finality, but as conducing instrumentally to unattained results. They were no snappers up of unconsidered animals. The bait of a pedigree *et prater ea nihil* failed to catch them. Something more than other men's leavings, or the sweepings of weeded herds, was demanded by these august exemplars of a noble science. They looked before and after; they examined, considered, compared, *selected*; and their careful and patient operations issued in effects which have been long before us, stamped with the approbation not of a nation only, but of the world. In prosecuting our proposed inquiry we assume at the outset that the Warlabby and Killerby blood is properly designated *now* by the term "distinct;" the main question to which we invite the attention of the reader being, not so much the character of Booth blood, which we are glad to admit is as fine as blood well can be, but in what way this blood arrived at its present state.

So far back as about the year 1810, upwards of fifty years ago, we find Mr. Thomas Booth, the father of the late John Booth, of Killerby, and Mr. Richard Booth, of Warlabby, using, in addition to his own bulls, sires from the Collings, Charles and Robert; and among the *principal bulls used as crosses within the last fifty-two years, but not bred by the Booths* (that is, by Mr. Thos. Booth, the father, or Messrs. John and Richard Booth, the sons), are Albion (14), bred by Mr. C. Colling; Pilot (496), bred by Mr. R. Colling; Rubens (5027), bred by Mr. J. Colling, White House; Remus (550), bred by Mr. Wright; Stephen (1456), bred by Mr. Charge; Matchem (2281), bred by Mr. Mason; Lord Lieutenant (4260), bred by Mr. Raine; Mussulman (4525), bred by Col. Cradock, and afterwards the property of Mr. Lax; Lord Stanley (4269), bred by Lord Carlisle; Exquisite (8048), bred by Earl Speer; and Water King (11,024), bred by Mr. Torr. Among the bulls which cannot with propriety be called principal bulls, but we abundantly used, though not bred by

the Booths, are sir Alexander (591), bred by Mr. J. C. Maynard; Scipio (1421), bred by Mr. Donkin; Ambo (1636), breeder's name not recorded, but his dam was bred by Mr. Poole; Francisco (2032) and Velocipede (5552), bred by Mr. J. C. Maynard; and Burley (766), bred by the same gentlemen, and out of and by a son of Venilia by Mr. Bates's Enchanter.

These details are far from being supplied in a spirit at all depreciatory of the Messrs. Booth. On the contrary, they are offered as affording very strong proofs of their sagacity and wisdom, and as a precedent which cannot be followed without immense advantage to all who adopt it. We have omitted several bulls intentionally, and some are, no doubt, omitted inadvertently; but this list, defective as it is, is sufficiently complete to assure the reader that the practice of the Booths convincingly illustrates the principle of selection, and establishes the general propositions we have advanced in its favour. It does not, of course, follow from the fact of so many *bulls* from various quarters having been used that a great variety of *blood* has been related by affinities more or less near; but a somewhat cruel examination of the composition of the pedigrees of the bulls whose services were engaged at Killerby and Warlabby shows that such was not the case, and that not only were many bulls used, but much blood of a diversified character was sought and adopted. We do not ask which of these crosses the Messrs. Booth liked best, or whether they ever regretted having adopted any of them: our present business being chiefly to set before the reader some evidence bearing upon the allegation, that the Booths, in attaining reputation, in no wise discarded the principle and practice of mixing blood from different sources and of different strains. More recently, the principle upon which Mr. Booth has proceeded, in resorting to a new cross, has evidently been to adopt a cross nearly allied to his own blood, thus avoiding abruptness of transition whilst he obtained the impulse of a fresh element. In two of the latest of the Warlabby crosses with other blood, the Water King and Lord Stanley crosses, this is strikingly apparent. Water King was out of a pure Bates cow, and by Baron Warlabby, a pure Booth bull; and the granddam of Lord Stanley was Lady Sarab, bred by Mr. Richard Booth, and own sister to Isabella by Pilot.

So far, then, from the Booths forming any exception to the principle of *selection* they are very prominent examples of it, and we may add, of its beneficial tendencies. It was during the time when this principle most largely prevailed with them their best families were consolidated. The partial reader may acknowledge the general truth of our observations, but may meet them by alleging that Mr. Booth's short-horns being now perfect, the necessity for occasionally re-



sorting to other blood is removed. We should dispute, upon physiological data, the inference thus imagined; for we believe the conclusion which cannot fail to be deduced from such data is altogether in an opposite direction, and enforces most distinctly the indispensability of forming new alliances in blood, if the health and strength and *fertility* of the old stock is to be perpetuated. Excessive in-and-in breeding obtains almost unavoidably in the early stages of the improvement of a species, and contributes greatly to the *speedy* attainment of that purpose, by condensing and intensifying in one animal properties that are desirable; but it by no means follows that what answered at one end of a process will answer equally well at the other; and we believe the concurrent testimony of the chief physiologists is hostile to the practice. Since Mr. Richard Booth has succeeded in letting his bulls for great prices, and the discriminative expression "Booth blood" has come to be affixed to the blood of the Warlaby animals, the habit of drawing upon other herds for new crosses has been discontinued, and the Warlaby herd is maintained entirely by sires bred upon the premises. Mr. Booth still adopts the system of selection, but not in the same way in which he adopted it when engaged in building up his reputation. His selections are no longer from the herds of other breeders, but from his own. He selects, apparently with thought and care, from his numerous bulls those which may seem to him best calculated to propagate the characteristic qualities of this far-famed short-horns; but it is said to be evident to almost everybody who considers the subject, not excluding the warmest admirers of Warlaby blood, that a policy of this sort contains within it the seeds of self-destruction; that it is merely a question of time; that it is the beginning of the end; and that, sooner or later the end will come. Such a result must be held to be *inevitable*, if it is according to the laws of nature that a persevering adherence to the same strain of blood without interruption impairs the energy and power which are absolutely indispensable to *perpetuate with regularity an improved species*.—*Bell's Messenger*.

### Steam Cultivation at Woolston.

On Friday last we paid our annual visit to Woolston, to see the results of steam cultivation, and to mark its progress in that chosen spot of its inauguration. Like all true pilgrims to the object of our study, we are happy to record that cultivation by steam is not only a grand recognized fact in that now renowned locality, but that it is gradually extending itself into a wider area, and is promising to become as general as horse and hand power in the tillage of the soil. We find, in short, that steam is no longer an

auxiliary to horse culture, but that horses are the auxiliary to that power. To show this we will just take a glance at the Woolston Farm.

In unison with our usual details of this highly interesting farm, we will take the heavy land first. Field number 1—wheat stubble: The corn was just cleared away: the stubble was remarkably clean, and by its strength showed that the crop must have been very good. It is also right to state that this wheat had been sown broadcast, therefore it had never been hoed, nor any other costly operation bestowed upon it to have produced the cleanly appearance which it presented. This field of stubble is sown with clover, and will require no operation this autumn. Field number 2 is beans, which is a fine, strong, and full-corned crop, and is estimated by Mr. Smith to produce forty-five bushels per acre. The men were cutting the beans, which enabled us to see the remarkably clean state the land was in. This will enable Mr. Smith to use his combined machine to cultivate and drill in the wheat at one operation. No horse labour will, therefore, be required here. Number 3 field is swedes—half a crop, the flies having destroyed the other half.—They have been horse-hoed four times, giving six days' employment to three horses. The land is clean, and will require no operation until the turnips are eaten off, and it is time to plant the barley in the spring. Field number 4 is barley, being cut; had been harrowed three times, giving two days' employment for horses; it is a fine, strong-strawed, and long-eared crop, and will produce, according to Mr. Smith's estimate, seven quarters per acre. This land, after the barley is carted, will be smashed up by steam, and cross-cultivated with horses, giving the three horses only two days' work.

We next come to the light land. Field number 1 is a fine healthy crop of beans, the stalks being from six to seven feet in height, and well corned. The produce from this field is estimated at not less than sixty bushels per acre. On looking under the beans we could quickly see that the land was perfectly clean, and that the combined machine could be easily used, cultivating the land and drilling the wheat at one operation; therefore, no horse labour would be required here. Number 2 is in roots—swedes and mangels. The latter is an average crop, Mr. Smith having had to sow his swedes a second time, the fly destroying the first plant. The roots have been horse-hoed four times, giving six days' employment to his horses during summer.—Number 3 was part oats and part wheat, both being carted; the oats were a fine crop, harrowed three times, giving one day's work for the three horses, and yielding at least ten

quarters per acre; and the wheat was an average crop, the wire worm having damaged a portion of it. The stubbles are very clean. One smashing and one cross cultivating, with the ridging and subsoiling, will be enough for the next root crop. Here we get two days' work with cross cultivating, four days' work with ridging, and four days' with subsoiling. Number 4 field is wheat stubble—very strong in the straw, and the crops taken from it will produce 50 bushels per acre.—The stubble is very clean, and when cleared off will be smashed up by steam and cross cultivated with horses, ready for beans in the spring. This will give two days' work to the horses. Number 5 field is a clover lea fed off; will be ploughed with horses for wheat, and will give 12 days' work for three horses. Number 6 field is barley; has been harrowed three times, giving two days' employment to three horses, the men cutting it. It is a very strong crop, the sheaves, where cut, lying thickly on the ground, and promises, according to Mr. Smith's estimate, a produce of 70 bushels per acre. There is a very good plant of clover upon it, and, therefore, it will require no operation this autumn.

In conclusion, we can state that the horse labour on the farm has been till the present time as follows: On number 3, heavy land, six days; on number 4, heavy land, two days; on number 2, light land, six days; on number 3, light land, one day; and on number 6, light land, two days. The work to be done this autumn will be—On number 4, heavy land, two days; on number 3, light land, ten days; on number 4, light land, 2 days; and on number 5, light land, twelve days, giving a total for the year, 43 days, with these horses, on the Woolston Farm. Here we have steam versus horse power demonstrated in the culture of our heavy clay soils.—*Bell's Messenger*.

### On the Feeding Value of Straw.

The wet weather which prevailed during the greater portion of the late hay-making season has, we fear, in many places greatly deteriorated that crop. In a recent ramble through the counties of Kildare, Carlow, and Wicklow, we saw but too plainly the ravages which the humid element had made on hundreds of portly cocks of hay. We were present at the sale by auction of the produce of a meadow of eight acres, which realized little more than 1s. 3d. per cwt. This is by no means a solitary example, as we have been informed by several auctioneers that large quantities of inferior hay have been disposed of this season at exceedingly low prices.

Very inferior hay is generally purchased by the hay dealers, and is mixed by them with a good article; and so skilfully, too, that the

mixture of the good and bad is often sold at the price commanded by the good, when disposed of *per se*.

We are clearly of opinion that inferior, fibrous washed-out hay is dear almost at any price, and that the money paid for such an article would be much better expended if invested in oats and straw.

Very discrepant indeed are the opinions relative to the nutritive and the fertilizing value of straw. In Germany and many parts of Britain it is held in such high estimation as a manure that its sale is strictly prohibited in most leases. In our own country many farmers believe it to be almost valueless as a feeding substance, whilst others entertain a high opinion of its alimental value.

The result of the experiments of Lawes and Horsfall prove that straw chaff is, as an adjunctive article of food, deserving of the farmer's attention. We think, too, they demonstrate very clearly the wastefulness of practice which prevails on so many farms of converting all the straw into litter, solely for the purpose of increasing the manure heap.

That straw, in a chopped, or what is still better, thoroughly bruised state, is a most useful feeding substance, the result of its chemical examination, and of actual feeding experiments with it, place beyond doubt; and as its price is comparatively low, it will be found a more economical feeding stuff than the wash-out coarse hay to which we have referred.

The analyses of hay which from time to time are published, exhibit every thing but uniformity. This arises from the complex and unconstant nature of the article, which, as is well known, is a variable mixture of various grasses and clovers.

Good hay, carefully saved, has, on an average the following composition:—

|                               |       |
|-------------------------------|-------|
| Water .....                   | 15    |
| Flesh-forming substances..... | 8     |
| Fat forming matters.....      | 44    |
| Woody fibre.....              | 27    |
| Ash (mineral matter).....     | 6     |
|                               | <hr/> |
|                               | 100   |

Coarse hay, which had been subjected to the influence of heavy and constantly recurring rain, will probably have the following composition:

|                               |       |
|-------------------------------|-------|
| Water .....                   | 14    |
| Flesh-forming substances..... | 4     |
| Fat-forming substances.....   | 37    |
| Woody fibre .....             | 40    |
| Ash .....                     | 5     |
|                               | <hr/> |
|                               | 100   |

The following table, compiled by Voelcksy, exhibits the composition of the straw of the cereals; and by comparing the analyses set forth in it, with those above given, a tolerable accurate estimate, for practical purposes, of the



relative value of both classes of feeding substances may be realized.

|                    | Wheat<br>Straw. | Rye<br>Straw. | Barley<br>Straw. | Oat<br>Straw. |
|--------------------|-----------------|---------------|------------------|---------------|
| Water.....         | 14.23           | 14.30         | 14.30            | 12.06         |
| Flesh-formers .... | 1.79            | 2.29          | 1.68             | 1.63          |
| Fat-formers.....   | 31.06           | 31.15         | 39.98            | 37.86         |
| Woody fibre.....   | 45.45           | 43.18         | 39.80            | 43.60         |
| Ash. ....          | 7.37            | 3.08          | 4.24             | 4.85          |

100.00 100.00 100.00 100.00

From these tables it will be seen that the only very important difference between hay and straw, is the high percentage of flesh-forming substances in the former. But it should be borne in mind, when comparing the relative value of the two articles, that the amount of flesh formers in a substance is no longer taken as the absolute criterion of its nutritive value. There is good reason to lead us to assume that all the fat-forming substances in the oil-cake given to animals are assimilated, whilst a large proportion of the nitrogenous or flesh-forming substances pass through the animal's body unaltered. This fact—for so we believe we may term it—is of importance to farmers who use their straw chiefly for cattle. The straw is sufficient in flesh-forming matters and abounds in fat-forming elements. In all oil-cake there is an excess of the flesh-forming substances. It is clear, then, that by a mixture of the two articles the “happy mean” would be attained.

Many of the best feeders in England employ large quantities of straw as food. It is stated that some of them adopt a peculiar and secret mode of preparing the substance, whereby its value is greatly enhanced. If we might venture an opinion on the subject, we would say that the “secret” consists in using only good straw, chopping it finely, and adding it in proper proportion to the other articles of the animal's diet.

As straw includes a considerable proportion of woody fibre, which is hardly if at all digestible, its mechanical preparation is a point of great importance. By chopping finely or thoroughly bruising the article, its fibrous structure is disintegrated in a degree proportionate to the amount of violence to which it is subjected. The nutritious particles are for the most part enveloped by the fibre, which to a great extent protects them from the action of the juices of the stomach. By breaking up the fibre the gastric juice is allowed to come in contact with the digestible portions of the straw; and, consequently, a larger amount of these substances is assimilated. Straw is one of those substances which may be cooked or fermented with advantage, as by either of these processes the fibrous matter is softened and broken up to such an extent as no longer to protect the albuminous, oily, gummy, and in other useful matters from the action of the solvents in the stomach—*Prof. Cameron, Editor of the Irish Agricultural Review.*

## Steam Cultivation.

[We take the following notice from a recent number of the *Bucks Herald*, (English) Mr. Lewis Taylor, who seems to have taken up steam cultivation in England as an avocation, is brother to Mr. Edwin Taylor, landscape gardener, both of whom were late residents of this city. The progress of steam as a motive power in agricultural operations, if not rapid, is, at least, constantly progressing and increasingly satisfactory.—Eds.]

To the enterprise of Mr. Fowler, of the prebendal Farm, many persons in Aylesbury and the surrounding neighborhood—whose knowledge of the cultivation, or rather the turning up of the soil, by means of steam power, entirely rested upon what they heard and read—have this week had the opportunity of seeing for themselves the practical working of a system which there can be no doubt will, ere many years elapse, entirely revolutionise the most important of farming operations. On Mr. Fowler's farm “Howard's New Patent Double Action Steam Cultivator” has been at work for several days, accomplishing its task to the satisfaction and admiration of all who have been attracted to the spot. Mr. Lewis Taylor, the gentleman who owns the cultivator, and superintends the operations, with the most cheerful courtesy and kindness gives to the spectator any information as to the cost, capabilities, &c., of his beautiful apparatus, answers any question which may be suggested by its working, and generally, after a short conversation, puts one quite *au fait* with the cultivation of the soil. It is not necessary that we should enter into a long and technical description of the working of the apparatus which constitutes either a steam plough or cultivator. This has been done repeatedly in our columns, but as this “New Patent Double Action Steam Cultivator” is upon a new principle, a few words are necessary. The desideratum in other cultivators (and this applies to steam ploughs as well) was the very thing which in this one is accomplished—namely, its double action, thereby giving increased facilities for easily working and saving time, considerable trouble, and some expense. It is a very neat and easily handled implement. It is made with a ribbed wrought-iron frame, combining great strength with comparatively little weight, and is fitted with five tines or legs, but can be used with four, three, two or one, according to the depth, the tenacity, and the heaviness of the soil. On Mr. Fowler's farm three tines are being used. The shares are made of various widths—from two up to ten inches—this too, as a matter of course, depending on the strength which in the judgment of a purchaser the implement

should have, and the amount of work it is expected to accomplish. The tines rock on the frame, so that the points, when working, are depressed, and the hinder ones slightly raised. The wheels are steered by the ploughman, who rides on the implement, alternately at each end, according to the direction in which he is proceeding. When a stoppage occurs, or should occur, either from the soil being extra hard or foul, the steerer can stop it instantly by giving a signal to the man attending the engine; it can then be drawn back and again driven at full speed. The "porters" upon which the wire rope runs in the line of the soil being turned up—or in other words, "the porters" which require constant shifting as the cultivator does its work—act very efficiently, and can be attended to by the most inexperienced boy. The anchors at each end of the line traversed by the implement require, of course, to be shifted each journey, and this too, is easily accomplished, and without more than a momentary stoppage. As a cultivator, the implement performs its work in first-rate style. The soil is as effectually as it is rapidly torn up and turned over, at a depth which can be varied according to circumstances from six to twelve inches. The whole apparatus—engine (which is a portable one, and of 10 horse-power), "porters," and implement—can be attended to by four men and two boys, and, eight acres per day can be easily accomplished, at a cost we believe, of 15s. per acre if the soil is once turned over, and 25s. per acre if twice or cross cultivated. From these figures farmers can make their own calculations as to the economy of the implement, and as to its efficiency they will, we think, be satisfied the moment they see it at work. As will be seen by an advertisement in another column, Mr. Taylor intends making Aylsbury his head quarters, so that the farmers of the Vale will have the opportunity of doing what Mr. Fowler is doing—practically testing the cheapness of steam cultivation.

### The Autumnal Fallow.

In the subjoined article from the *Mark Lane Express*, written by a "Practical Farmer," will be found much that is applicable to our condition and wants in Canada. We have now, gang ploughs, horse-hoes, scarifiers, &c., well adapted for fall culture, opening up the soil to the influences of air, light and moisture, and for eradicating weeds. The latter is an object of paramount importance, as is well known to every practical agriculturist. The practice of autumn cultivation in some form or other has been steadily gaining ground at home for many years,

and may now be said to form a distinctive feature of British Agriculture:—

Amongst the many modern improvements in agricultural practice none has received more favor or become more general than autumnal cultivation. Wherever we travel at the close of September or the beginning of October, in this country, we find the practice universally adopted, and being carried out in a variety of mode. In ordinary practice, the skeleton plough, and broad-share plough, and even the common plough, are brought into requisition; but the more modern course is to resort to the very many cultivators and scarifiers lately introduced, the manufacturers of which are to numerous to mention: but the implements which have received most patronage are the "Bentall," the "Biddell," the "Clay," the "Carson," the "Coleman," the "Howards," the "Ransomes"—scarifiers and cultivators named after their respective makers—besides others of considerable note, and also many of local construction—in fact, any and every implement competent to break or "smash" up the soil.

The great benefits derived from autumnal cultivation are mainly the aeration of the soil, the eradication of root-weeds, the promoting of the growth of all annuals, and their subsequent destruction, the injury done to, and almost annihilation of the insect tribe, and the aid thus given to more speedy subsoil drainage—all very important, and demanding the prompt attention of every farmer. The aeration of the soil at this precise period is of much greater importance than is generally attributed to it. It is at this season that all vegetation has pretty nearly arrived at its full growth. The cereals, of course, all are ripe; and the decay of straw and stubble is very great. The green crops are also at their full growth, and decay in leaf is rapidly proceeding. The potato crops, cloverleys, &c., are bare of leaf also. The foliage of the trees and hedgerows is all giving way; the ditches and ponds give out their odours, unmistakably manifesting the decay of vegetable matter; the dews and fogs of autumn are many and heavy. All this combined must produce, eliminate, and diffuse a vast amount of vegetable effluvia, with which the atmosphere is, in my humble opinion, heavily charged, and which, to unscientific observers, is sufficiently proved by the malarias which commonly prevail at this season. Now the great thing is to break up, "smash up," and prepare the soil as minutely as possible, for the reception of these fertilizing vapours, this floating effluvia. If it is not thus broken up, the deposit by the night-dew is speedily taken up by the day's sun, and no benefit arises: it cannot penetrate the hardened soil. But if it is properly prepared, these fertilizing influences are received, and at once appropriated by the soil; and the advantage of an autumnal fallow, and in a great measure of a real or dead fallow, is ex-



perienched; the old adage, "One autumn ploughing is worth two summer ones," is verified.

The eradication of root-weeds is very important, and in a fine autumn is often effected satisfactorily. It is particularly requisite on lands not quite prepare for wheat-seeding. The present season is a peculiarly favorable one, and no time should be lost. The land should be broken up to a considerable depth—at least; below the rootlets of the weeds—by a competent implement, and ought then to be well-worked by harrows, rollers, &c. The weeds on some stiff soils will dry up and die; but on the far greater majority of soils they should be collected, gathered up, and burnt, or be carried to a fold-yard for mixing and treading down with the farmyard manure. In this way it is most serviceable; but if burnt, it is almost valueless. The promotion of the growth of annual seeds of weeds is another important consequence attending autumn culture, as by the various processes of cultivation they are brought into contact with the soil, and made to vegetate. The young plants are then easily destroyed by subsequent culture. Another benefit is the wholesale destruction of innumerable insects, slugs, worms, grubs, &c., &c., both in their larvæ state and at full growth. The repeated disturbance of some of these insects has a marvellous effect. The little beetles of the wireworm tribe, by some instinct or other means, know this, and will not deposit their eggs where such operations are going on. The chosen abodes of the various grubs, wireworms, &c., &c., are broken up, and vast numbers become the prey of the feathered tribe; others are exposed out of season, and therefore die.

Another benefit is, that this pulverization contributes greatly to facilitate the passage of the autumnal rains through the soil into the subsoil drains, thus giving it a quick riddance of superfluous water, and at the same time procuring a more copious supply of ammonia from the rains that fall. It is by the passing through of rain water that the soil receives its chief supply of ammonia, which is so conducive to the full development of the wheat plant, and consequently it is one of the great acquisitions attained by autumn fallowing. Taking then into consideration these principal items of the subject, it will, I trust, be manifest that autumnal fallows are of immense value, and cannot be too highly recommended.

The modes of cultivation are almost as various as the soils cultivated. The greatest acquisition in modern times, for this purpose is the application of steam to cultivation. It is a wonderful improvement, and worthy of adoption wherever it can be carried on without obstructions from stones or roots; and it has arrived at that height or degree of perfection which renders it available to men of moderate means. The process can proceed under almost any circumstances. No soon-

er is a field cleared than the steam-cultivator may commence its operations, the horses of the farm continuing the cartage; besides, it requires so few hands, under its best phases, that no difficulty can arise in that respect, and no mode of cultivation yet practised can equal it in the effective power and correct application. The breaking or "smashing up" by it is beyond the power of horses or animal life; the depth reached is so great, the work done is so regular, both in depth and fulness, and the whole is in such a business like character, that hitherto nothing has equalled it, notwithstanding the great advance made in agricultural mechanics as applied to cultivating implements. Steam cultivation then will undoubtedly be invaluable for effecting the autumnal fallow.

It would seem superfluous for me to point out any course of management best adapted to secure a good autumn fallow; but it must be remembered that we do not always write to experienced farmers, nor do we presume to instruct them. Our aim is more to inform the inexperienced and youthful farmer. We would then say, that as soon as possible after the crop is led or carried, the land should be harrowed or well raked, in order to get off all shaw and stubble likely to impede the working of implements. The scarifier should then be passed through it at as great a depth as appears desirable, and in this way it should first take the furrows lengthwise, and then take the whole transversely across the field: by this means the furrows get well broken up. After an interval of a few days, a drag or heavy harrow should follow the scarifier, to be succeeded by light harrows and roller, to pulverize thoroughly, that all may obtain a thorough cleansing. The interval named is to allow time while in its roughest state for atmospheric influences to operate. When seed time arrives, it should receive the ordinary ploughing and subsequent management necessary to complete a good seeding.

One other great, but collateral advantage derived from this course is, that it will not be requisite to drill in so much seed. The slug and noxious insects being destroyed or greatly thinned, the occupier may depend upon securing a full plant, at least from their depredations; besides, the land is in a far better state for promoting the rapid growth of the wheat plant. Moreover, it has been proved to demonstration that a good or strong plant from a thin seeding is more prolific than a thick planting from thicker seeding. In my own business, after these processes I do not drill in more than from five to nine pecks of wheat per acre, and the season must be bad indeed that will induce me to drill so much as nine pecks. I make six pecks suffice if all is favourable. The state of the soil, the condition in which I am able to get in the seed,

the state of the weather, and the time of year, all rule me, in their turn. The better the land works the more favourable the season, the less seed I drill; but *vice versa*, the more I drill, but never to exceed nine pecks per acre of good seed.

### Pastures for Milch Cows.

In the last volume of the Transactions of the New York State Agricultural Society is an excellent paper on Dairy Farming from the pen of Mr. Willard of Herkimer County, from which we select the following:

Old pastures that have a fine thick heritage of several kinds of grasses adapted to the soil, and coming to maturity at different seasons, will generally be found to produce more milk and from which a richer, better flavored, and finer quality of butter and cheese are manufactured, than from the rank growth of grasses on newly seeded lands. Again, newly seeded lands will not bear that close cropping, nor will they endure drouth like permanent pastures.

Doubtless when the land has been underdrained, deeply subsoiled, enriched, and then seeded with a judicious admixture of grasses of the several species best adapted to the soil and climate, a permanent pasture of the best character may be soon obtained, and would amply pay all expenses for such cultivation. Yet few, comparatively, can be induced to enter upon this system of farming, and the next best course is to be considered.

In the treatment of old pasture lands injured from close cropping or other causes, but not wholly run out, it will generally be better not to break up, but to leave them for a part of the season to resuscitate, running a harrow over the ground in early spring, and sowing a mixture of timothy, blue grass, red top, the clovers, red and white, and orchard grass, making an application of plaster, pulverized bones, ashes, salt, or other stimulating fertilizers. Ashes, leached or otherwise, remove mosses and are a valuable application to grass lands.

There are pastures in Herkimer county which have not been broken for more than forty years—many that have never been plowed perhaps but once or twice, years ago, when the country was new, that are yielding an abundance of nutritious food, enduring year after year close cropping and drouth, without any perceptible injury or tendency to run out, and yet have received no top-dressings, beyond the usual application from time to time of gypsum. The grass of these lands spring up green and fresh, with a thick fine bottom, a marked contrast throughout the season to occasional patches on the same soil recently re-seeded. Stock too, it will be observed, are to be more frequently found on these pastures, thus showing that the grass is sweeter or more nutritious than on the newly seeded parts.

To plow and cultivate such lands, would be to destroy the original grasses, and after re-seeding, many years must intervene before the new grasses can obtain that firm possession of the soil, and the enduring vigor and variety of the old sod.

The reasons for the successful growth of these natural grasses need not here be discussed—the decomposition of leaves, wood roots, and other vegetable matter, for centuries, seems to have accumulated a surface soil, capable of supplying the best possible food for growing these plants in perfection, which, intermixed as they are with artificial grasses, timothy, clover, &c., form a more closely matted sward, and produce an herbage more nutritious, and better adapted to the animal system, than that from newly sown seeds on recently cultivated lands.

There are large tracts of country, the soil of which is unsuited to hold the grasses of any approved kind, for any great length of time.

They are not natural to grass, and therefore unreliable, and cannot be profitably employed in stock farms. The character of the soil is usually of a light texture, sandy or gravelly; they will require to be frequently plowed and re-seeded with clover, timothy, or other rapidly maturing grasses, and for short periods may yield good crops. But such soils do not seem to contain the elements necessary for the establishment of permanent pastures and meadows, being more suited to the growing of grain and other crops.

These lands stretch away through the middle, western and southern States, leaving comparatively but narrow belts and patches of land adapted to the dairy. So far, experience has shown that the real dairy soils are very limited in extent, and this fact while it gives assurance that the constantly increasing growth of our country renders certain a constantly increasing home demand for the products of the dairy, and while the nature of the country itself precludes any great or extended competition, should at the same time stimulate those who have been so fortunate as to be in possession of the favored soil, to bring it up to its highest capacity, and make their staple products of the best and choicest quality.

As a top-dressing for grass lands, the application of gypsum, salt, ashes, bone-dust, lime, decomposed urine, well rotted manure applied in fall, composts of manure, river mud, road scrapings, or muck; each and all have a marked influence in promoting the growth of grass.

A more general use of bone-dust, it would seem, should be adopted, in order to return back to the soil the phosphates which are annually taken from it in considerable quantities by milch cows. So large an amount is there taken off in the milk of cows, and for the annual production of their young, that the use of bone-dust on the older dairy farms, it is believed,



will soon become a necessity. Wherever employed as a top-dressing for grass lands, its results have been highly beneficial, and its application on dairy farms should be as universal as that of gypsum.

### The Lower Canada Provincial Exhibition.

The Provincial Exhibition opened at Sherbrooke on Wednesday last. The day was as fine as could be desired but as a *Provincial Show* it can hardly be pronounced a great success. The leading feature was the cattle and particularly the working oxen. Several good judges from abroad said that the show of cattle was the best ever exhibited in the Province. The Townships have no occasion to be ashamed of the specimens of cattle they had on the ground. Stanstead took the lead in cattle, their team of ten oxen was awarded the 1st prize, Compton the 2nd, and Ascot came in No. 3. These three teams of ten oxen each was a right worth looking at by a lover of good cattle.

Of fat cattle there were not a large number, but some splendid animals. Samuel Towser, of Quebec, exhibited a pair of fat oxen, girt 9ft. 2in., 17 h. high, and said to weigh over 6,000 lbs.; he had also a fat cow, a perfect mass of fat, she measures 31 in., across the hips, girt 8 feet 9 in. The oxen were recently sold for \$600. They are good samples of what can be done by high feeding, but we should fancy not at much profit.

There was a good display of sheep, the Leicesters taking the lead.

The swine were not very numerous, but comprised some very handsome animals.

There was a very good display of horses of all kinds.

Flax was perhaps the most important article exhibited. There were several specimens of dew-rotted, which was necessarily coarse; some specimens of steeped were much finer. There was a sample of flax rotted under the snow. The results are as satisfactory as steeping; this sample was exhibited by Mr. Knox, of Lachine. There was a good sample shown by Mr. Boa, with the seed from it, showing that this crop will yield both seed and fibre of a fair quality at the same time. Mr. Boa also exhibited a sample of hemp in the stock, about 12 feet high, and a sample of the fibre made from it which looked as well as flax.

The implements and manufactures were not very numerous, among them were:—ploughs, sugar pans, fanning mills and cultivators, by Charles Brooks, Lennoxville; cast steel and iron ploughs, cultivators and harrows, by Jas. Patterson, Montreal; Sugar boilers and ploughs, by Samuel Tuck, Sherbrooke, among them was a beautiful finished breaking up plough. R. Lewis, of Melbourne, exhibited an ingenious

churn on the principle of the common dasher, moved up and down by a crank of a saw mill, also a farm gate hung upon rollers. C. R. Parks, of Waterville, a dasher churn moved by crank, which gives the dasher a twisting motion; Eadon, Wyatt & Co., of Montmorency, a mangle for ironing clothes, carrying a pressure of 1,200 lbs.;—also a washing machine and mangle combined, also fanning mill and churn; M. Capel, of Ascot, a chain harrow or pulverizer, and a light adjusting harrow; Henry Rose, of Stanstead, Wood's mowing machine; Matthew Moody, of Terrebonne, a one and a two horse power thrashing machine, horse rake, clod crusher, and a combined reaping and mowing machine; St. Germain & Refus, of St. Hyacinthe, a horse rake; John Gilmall, Stanstead, a roller; C. P. Mallory, Huntingville, a large cylinder roller.

S. T. Rose, of Sherbrooke, exhibited a very beautiful side-board made of bird's eye maple, and chiffonnier of the same material, both of which for beauty of workmanship were much admired.

The total number of horses on the ground numbered 175; cattle 354; sheep 136; swine 40; agricultural implements 90; besides the products of the field.—*Montreal News*.

### Facts from the Census for Upper Canada.

The quantity of butter made in 1861 amounted to 26,828,264 lbs., and of cheese to 2,687,172 lbs.

In 1851 there were 16,064,532 lbs. of butter, and 2,292,600 lbs. of cheese made, or

|           |                         |
|-----------|-------------------------|
| 1861..... | 26,828,264 lbs. butter. |
| 1851..... | 16,064,532       “      |

|                    |                         |
|--------------------|-------------------------|
| Increase in 1861.. | 10,763,732 lbs. butter. |
| 1861.....          | 2,688,172 lbs. cheese.  |
| 1851.....          | 2,293,600       “       |

|                    |                      |
|--------------------|----------------------|
| Increase in 1861.. | 394,572 lbs. cheese. |
|--------------------|----------------------|

Beef in barrels:

|           |         |
|-----------|---------|
| 1851..... | 113,445 |
| 1861..... | 67,508  |

|                    |                    |
|--------------------|--------------------|
| Decrease in 1861.. | 45,937 bbls. beef. |
|--------------------|--------------------|

Pork in barrels:

|           |         |
|-----------|---------|
| 1861..... | 336,744 |
| 1851..... | 317,010 |

|                      |                    |
|----------------------|--------------------|
| Increase in 1861.... | 19,734 bbls. pork. |
|----------------------|--------------------|

The increase in barrelled beef and pork, and consequently in the export of these articles, is very small in ten years, and shows that in this branch of the provision trade Upper Canada has not made such progress by comparison with the years 1851 and 1861.

The exports from the Province of beef, pork

butter, and cheese, for the years 1859, 1860, and 1861, were as follows:

|        | 1859.          | 1860.          | 18 1.          |
|--------|----------------|----------------|----------------|
| Beef   | 3,235 cwt      | 1,846 cwt      | 1,598 cwt      |
| Pork   | 36,984 "       | 63,109 "       | 81,032 "       |
| Butter | 3,750,296 lbs. | 5,512,500 lbs. | 7,275,426 lbs. |
| Cheese | 323 cwt.       | 1,100 cwt.     | 2,628 cwt      |

The Fisheries of the Upper Province do not show that increase which might be expected from the valuable resources of the great lakes.

In 1851 there were 11,886 barrels of fish cured; in 1861, 10,013 barrels; 2517 quintals, and 175,744 lbs. of fresh fish sold.

In Michigan, which is the largest inland fish producing state, the value of white fish returned in 1860, amounting to \$250,467. There is yet a vast field open for remunerative enterprise in the fisheries of Lakes Huron and Superior. The whole of the north shore of Lake Huron with its million islands will yet yield great wealth to the country from its clear and cold waters. The art of the preservation of fish is as yet unknown in Canada, or rather it is not practised. In Germany, France, and Britain, Pisciculture is now an acknowledged department of national importance. It would be a wise economy on the part of the Government to examine into the working of fishing regulations and Pisciculture now in operation in Europe. A few skilled emigrants from France, Germany, or Britain, would soon enable Canadians to rejoice in the possession of the finest fresh-water fisheries in the world.—*Journal of Board of Arts and Manufactures.*

### The Radish as a Field Crop.

"Once upon a time" the leaves of the radish were boiled and eaten, but in these days they are subjected to neither one nor the other of those processes. The root is, however, in its raw state, as all our readers are aware, one of the dainties of the table.

Many of those who devote themselves to the important study of dietetics consider the use of raw vegetables as objectionable; but, be their objections groundless or the reverse, it is certain that a vegetable which admits of being eaten raw with advantage must certainly be a good nutritious article of food when cooked. We once tried the experiment of eating matured radishes, not as salad, but cooked as any other boiled vegetable, and we found the flavour rather agreeable than otherwise. Boiled radishes, roots and tops, form excellent feeding for pigs—how could it be otherwise! for what is good food for the family of man must surely be a luxury for the swine tribe. Horses, too, we have known to eat radishes, as they would carrots, with avidity; and, indeed, we have no doubt but that these plants would be found on trial to be readily eaten by every kind of farm animal. But it may be asked why we recommend the use

of radishes as food for man and his "subjects in creation" when there are so many better articles in common use—potatoes, turnips, mangels, *et hoc genus omne*? We will try to give a satisfactory answer to this question.

Between the departure of the turnips and the advent of the new grass there is a kind of agricultural interregnum. We want a good tuberous, bulbous, or tap-rooted plant to fill up this interregnum, and such a plant we have to some extent in the radish. The root is certainly a small one; but, then, it is so rapidly developed that a good supply can be had thirty days after the sowing of the seed. Two crops may easily be obtained from land under potatoes; one before the cops covered the ground in spring, and the other in autumn, after the tubers have been dug out. If the land be altogether devoted to radishes, four crops in the year is the least number that may be reckoned upon, and if spring and late autumn be mild, six crops are not only possible, but highly probable.

The yield of radishes, when cultivated in the garden, is about 2,500 plants per perch; and as on an average each radish weighs about one and a-half ounces, the weight per perch will be nearly 230 lb., which is at the rate of nearly nine tons per statute acre, of which one-third will be tops. These figures relate to the careful cultivation of the plant, under the most favourable conditions of growth. We must not, therefore, expect to get so large a return if the plant be cultivated in the field; but keeping fully within bounds we may assume that a single field crop of radishes yields:—

|                         |         |
|-------------------------|---------|
| Of roots.....           | 5 tons. |
| Of tops and leaves..... | 2½ "    |

Total.... 7½ tons.

Now, although we believe no loss would be incurred by devoting a portion of the farm solely to the cultivation of the radish, still it is not our object to recommend the appropriation of any part of the farm to such a purpose. What we

want to bring under the notice of our readers is simply the desirability of cultivating a root crop which may be perfectly matured before it is time to sow turnips.

And now a word or two on the mode of cultivating this plant, and we dismiss the subject at present.

There are several varieties of the radish. The long white, white Russian, red necked white, and purple, are kinds adapted for spring. The turnip-rooted radish, adapted for summer, comprises several varieties, of which the following are the principal:—Early white turnip, white turnip, purple turnip, pink turnip, and new yellow short-topped. The autumn and winter varieties embrace the yellow turnip, white Spanish, oblong brown, large purple, and winter Spanish. The turnip-rooted, or Spanish kinds, alone should be grown in the field.



The radish can be cultivated on any kind of ordinary soil, but it appears to delight in a light and porous loam, containing a moderate amount of organic matter. Except for early and late crops, an open situation is the most desirable.

The seed may be sown either broadcast or in drills; the latter is by far the preferable mode, and as the seed is large there is no difficulty in its regular distribution. The seed is cheap; but this should not induce thick sowing, which, if practised, causes an excessive development of the tops, and a consequent hardness and toughness of the roots. The seeds should be placed a quarter of an inch below the surface, and care should be taken to protect them from the manure, which, indeed, should not be applied at the time of sowing. The drills for the spindle rooted kinds should be about three inches asunder; those for the turnip rooted, drills about seven inches apart.

When the seedlings exhibit half-a-dozen leaves or so they must be thinned; a space of three inches should intervene between the long-rooted kinds, four for the turnip-rooted, and six for the Spanish and other large varieties. The latter kinds are best adapted for high cultivation.

In conclusion, we would suggest that this plant should at once get a fair trial as a stolen crop. If it succeeds as such, it will not be the first gift of the gardener to the husbandman. Were not the red beet and the mangel-wurzel once only known as the produce of the gardener? We commend, therefore, the radish as worthy the attention of farmers in general, of small farmers in particular, and cottars especially.—*Dublin Agricultural Review.*

### Rot in Cattle.

We hear much about rot in sheep, and not without good cause. We know extensive districts where a loss of 15 or 20 per cent. must have been sustained this season. Ewes and hogs are being sold now in apparently blooming condition, but in reality "rotten," and to keep them on would only amount to the loss of the bare salvage procurable for their use. These remarks concern more the English and the Irish than the Scotch farmer; nevertheless, a season of incessant wet brings in its train disease of a special kind; and though some parts are more favoured than others, still, very generally distributed over the United Kingdom we notice the effects of an unusual period of constant rains. We have had ample opportunities of late to see the condition of stock in different parts of the country after three months' and more grazing. In the most fertile districts of Scotland, and on the rich grazing lands of England and Ireland, there are many instances of animals not improving in the least in condition since the 1st May. It is also worthy of notice that any weakly or infirm stock, especially in ill drained districts,

has suffered severely from the very miserable condition of grass. Wherever the mouth and foot disease has appeared—and where has it not?—the number of deaths has been unusually large, in consequence of the starved condition of all lean stock. It is well known that this disease is not a very deadly one, but we have to record losses of 5 and 10 per cent., and sometimes far more, amongst calves and year old's. There are parts where deaths have been fewer, but all know how low in condition cattle get with this disease; and where the grass has been bad, the chances have been small of restoring the animals even to the state in which they were before being placed on pasture land. But it is our object to-day to allude to a disease concerning which little has been said in this country, viz., rot in cattle. It is especially prevalent in low, damp, situations, and on the marshes scattered throughout the continent of Europe; and also in America herds of cattle are much injured by attacks of the rot.

It is the same malady as the "sheep rot," but sheep certainly suffer more certainly and more severely from feeding on damp plains than cattle. The low condition which we have said may be witnessed very generally amongst grazing cattle has been most favorable to the development of parasitic disease; and the fluke has perhaps been amongst the most busy of the destructive entozoa. A rough coat, dry skin, prominent ribs, sunken flanks, arched back, pallid membranes, all indicate an unhealthy state. A small and frequent pulse, capricious appetite, yellowness of the eyes and mouth, coldness of the extremities, and the absence of symptoms of acute fever, establish, with the other signs mentioned, that the animal is suffering from that slow, lingering, and destructive disease, "rot." Swellings of the extremities, and especially an accumulation of fluid about the throat, supervene as the animal grows weaker and weaker. We have seen cattle with the worst symptoms of rot attacked by parasites which develop in the orbits, and may be seen rolling over the front of the eye-fall. Lice and the parasitic fungi which frequently infect the skins of young cattle abound in rotten animals; and this season many cases have been complicated by the accumulation of strongyli in the lungs and wind-pipe.

The loss amongst cattle suffering from this disease is considerable, especially in consequence of the difficulty of feeding them even when the malady is mild. It is not so deadly as amongst sheep, and as amenable to treatment. Artificial food should be given freely with common salt and preparations of iron. No tonics are so effectual as the ferruginous compounds, and if parasites abound in the skin, it is indispensable to clean the latter thoroughly by repeated washings with soap and water, and the application of washes to destroy the animalcules.—*Scottish Farmer.*

## Agricultural Intelligence.

### Sale of Stock at Guelph.

On Wednesday last an important sale of stock took place on the farm of Mr. F. W. Stone, President of the Agricultural Association, Guelph. The attendance was not very large, and only a few stock-breeders from a distance were present. Mr. Stone's splendid stock of cattle was first offered, but as the bidding was far from spirited, only a portion of the lot was sold. Lady Cramer, a red and white cow, calved 24th July, 1850, was knocked down to Mr. Thomas, McCrae, for \$100. Young Velvet, calved 14th June, 1853, was sold to Mr. F. Lowell, of Galt, for \$180. Sanspareil, a two-year old heifer, was sold to the Hon. David Christie for \$180. Sanspareil, 5th, calved 13th February 1860, was sold to Mr. Walter Raikes, of Barrie, for \$180. Walter West bought Goldfinder, a yearling heifer, for \$120, and Mr. Arthur Hogge, bought the second Duchess of Oxford, calved 12th December, 1860, for \$205. Hon. David Christie bought Miss Margaret, calved 27th November, 1861, for \$135. Only one aged bull was sold—President, to Mr. Jas. Carter, Puslinch, for \$80. Royal Duke, calved 5th December, 1861, was sold to Mr. Thomas Clarke, Eramosa for \$120. Mr. Arthur Hogge bought Earl of Gloucester, calved 15th December, 1861, for \$100. The sheep did not go off well. A gentleman from Connecticut bought one Cotswold two shear ram for \$45. A Leicester two shear ram was sold to Mr. James Cowan for the same sum. The others sold—6 or 7—were bought by persons in the district at prices averaging \$15 each for Southdowns.—*Leader.*

The agricultural statistics of Ireland, just published for the current year, show a decrease in the live stock of the country since 1861 by nearly 10,000 horses, 220,000 cattle, and 100,000 sheep. Pigs have increased 50,000. The value of the live stock is on the whole less by £1,500,000. This is attributed to the distress consequent on scarcity, which has induced excessive sales. The average in grain of all kinds is less by 72,000, that in Potatoes alone being less by 116,000 acres.

**COMPOSITION OF SEA WEED.**—Sea-weeds, in the condition of mixture generally, contain in 100 parts of ash, silicic acid 3.00, carbonic acid, 13.58, phosphoric acid 4.59, sulphuric acid 6.22, peroxide of iron 2.53, lime 18.15, magnesia 6.48, potash 12.77 chloride of potassium 9.10, solide of potassium 1.63, chloride of sodium 22.08.

## Horticultural.

### Hamilton Horticultural Society.

The third and last Exhibition of the season of the Hamilton Horticultural Society, was held in the Mechanics' Institute on Friday the 19th ult. Seldom have we seen a finer display of fruits. The hot-house, and open air or hardy grapes were well worthy of the notice they received. The Black and Muscate Hamburgs, Muscate of Alexandria, and Bowood Muscate, Greely Frontignaro, Royal Muscadine, and Black St. Peters, were all excellent. Amongst the hardy varieties, Hartfords, Prolific, Clinton, Delaware, Concord, Diana, and Rebecca, all good specimens, and very creditable to the growers. The Peaches and Nectarines were beautiful. The early Crawford and Kensington, exhibited by Mr. Freed, were the finest we have seen for a long time. Plums, Apples and Pears were all in abundance, also some Damsons, Quinces, Crabs Siberian, mammoth and other Tomatoes, Melons scarlet and green fleshed, Water Melons, Citrons and Squashes of various kinds, Capsicums as large as pepper boxes and hot as fire.

**FLORA**—in hot and Green-house plants was not so well represented as we have seen on former occasions at this time of the year. The hot and green-Houses of W. P. McLaren Esq., produced some Fuchsias. Fine plants of *Cytisus reflexus*, *Bouvardia Hogarth*, *Bouvardia leiantha*, a splendid plant of *Stephanoth floribunda*, and a fine lot of Cockscombs. There was a good display of cut flowers, comprising Dahlias, Phloxes, Asters, Hollyhocks, French and African Marigolds, Verbenas, Stocks. Two collections of native plants, one of 12 varieties by Mr. Freed, the other of 24 by Mr. Sanderson, junr. Bouquets for the ladies, and Bouquets by the ladies, hand and table, of all shapes and sizes, made up of the prettiest flowers that could be got: such as the Princes' Feather, Rue and lime, Forget-me-not, and other sweet things, with Love-lies-bleeding; amongst the rest, one of native flowers by Mr. Sanderson, junr., was very much admired.

The *Vegetable* department was well represented, but not so largely as we have seen it before at this time of the season. All the productions were good; Cabbages and Cauliflowers large and excellent, Brussels Sprouts, Carrots, horn, orange and Altringham; Turnips, white and yellow, Corn sweet, Celery red and white, Onions and Musselbough Leeks, Potatoes, Parsnips, Salsifys, Scotch Kail and Mushrooms, with two large collections of vegetables, by Messrs. Taylor and Sinclair.

The amateurs came out well in all the departments.

In the afternoon an interesting ceremony took place in the presentation of two medals, one given by Adam Brown, Esq., President of the



Society, to the Gentleman's Gardener who keeps his garden and grounds in the best order, and his flower-bed most tastefully arranged during the season; the other, by the Directors, to the Market Gardener who, during the season, keeps his grounds in the neatest order and best state of cultivation. The first medal was a model of beauty and good taste, bordered by the Maple Leaf, and surmounted by a Beaver emblematical of Canada, with the insignia of Horticulture on the ribbon, the spade, hoe and rake. It was manufactured by Millidge & Son, Princess Street, Edinburgh, and bore the following inscription: "Presented by Adam Brown, Esq., President of the Hamilton Horticultural Society, 1862, for the best kept and most tastefully arranged Garden and Grounds." "On the other side was inscribed. "Gained by Hugh Shaw, Gardener to R. Juson, Esq." The Directors' Medal was of good taste, and bore the following inscription: "The Directors of the Hamilton Horticultural Society, 1862, to the Market Gardener who has kept his grounds in the best order during the season." On the other side. "Awarded to James Wildes."

The presentation was made by the President, who appropriately addressed the successful competitors, very specially remarking on the good obtained by well organized systems. Messrs Shaw and Wildes responded.

Such actions by a society are not only stimulating, but also very beneficial to all parties. We therefore hope that as a good beginning has been made by the Hamilton Horticulturists they will continue to bear it up, and that other Societies will follow their example.

GEO. LAING.

Hamilton, 6th Oct., 1862.

### Advice on Planting Fruit Trees.

As every season for setting out trees approaches, many begin to turn their attention to the proper selection of varieties to occupy their intended fruit-gardens. A few general hints may therefore be useful at the present time, and serve as an answer to the many inquiries which we receive on this subject.

There are two prominent objects with tree-planters, namely, raising fruit for market, and securing a family supply. The present suggestions refer more particularly to the latter, and we shall endeavor to show in a general way how a family may best attain this luxury at all seasons, or in other words, how the complete circle of fruits may be obtained. It is however not merely a luxury—for nothing in the form of diet contributes better to the preservation of health during the heat of summer and the changes of autumn, than a regular and constant supply of good well-ripened fruit, partaken in moderate quantities. It also has economy to recommend it—because the table that is furnished with fresh or cooked fruit needs but little

of the more costly provisions from the butcher's and confectioner's.

The first question that occurs with many, is, what fruits will give fresh fruits to the best advantage throughout the year, and the second is, how many trees and plants will be needed, and how much land for their successful growth. A third question is not unimportant, namely, how long after we have prepared the ground may we expect to obtain good crops.

To answer the first question, we would name those sorts first that ripen earliest in summer. These are all exclusively small fruits. The early strawberries take the lead in the list, giving in the Northern States ripe berries in the first two weeks of summer, but varying in season nearly one month with Northern New-York and Southern Pennsylvania. A locality well sheltered from winds, and where the sun's rays are not impeded, will ripen the berries some days sooner than a more exposed place. Unlike trees, there is no fear of losing the crop by the cold of winter—and if there is any danger of the plants being injured, this is easily removed by covering the plants with straw, or spreading a coating of evergreen boughs or leaves over them.

Next to strawberries, and within a few days of them are the early cherries—such sorts, for example, as the Early Purple Guigne, May Bigarreau, Belle d'Orleans, &c. We have nothing to compete at all with cherries and strawberries, currants and raspberries, the next on the list, being several weeks behind them. The best varieties of these four, if planted in sufficient quantities and well cultivated, will give an admirable and delicious repast for every table for six weeks or more from the first until after the middle of summer.

About the usual "harvest time," some important additions are made in the larger fruits. The Primodian plum, the early apricots, and the earliest apples and pears then begin to ripen. These are again succeeded by the first peaches, and the many sorts of pears, apples, plums, &c., which continue to mature successively through the whole of autumn. The first half of autumn is marked by the most profuse abundance; as winter approaches, the number becomes smaller, and special care is needed to procure plenty of good winter pears, and with ordinary management very few are ever found towards spring. Well cultivated and *well ripened* hardy grapes, however, are very easily kept through winter, and these and winter apples may be best relied on at this season of the year. The only fruit that can be depended on for a good supply in spring until strawberries again appear, are winter apples; although such late pears as the Easter Beurre, may with extra pains be had at that time, but families with moderate incomes will hardly care to live on such luxuries as bring quickly in market three dollars a dozen, or twenty or thirty dollars per bushel.

In thus pointing out how the yearly circle can

be secured, we have omitted hot and cold house grapes, which of themselves have been made to give ripe crops every month in the year. The expenditure required for such a supply, like that of Easter Beurre in spring, is beyond the means of moderate families.

The next question is, how many trees and plants will be required to give the yearly supply, and how much land must they occupy. The simplest way to answer, will be to observe the usual amount yielded per acre, and reduce the amount to a family supply. Strawberries of the most productive varieties, such for example as the Wilson, Downer, and under the most favorable auspices, the Hovey and Triomphe de l'And, will yield 200 bushels per acre, if cultivated as well as good gardeners do the work. A family wants half a peck per day, for a month or more of time—equivalent to a bushel in eight days, or about six bushels for the season. One thirtieth part of an acre, or five square rods would be enough. Very few families provide so much as this, and very few have a quart or more of berries on each table. It will be observed that as the strawberry crop scarcely ever fails, such an estimate may be made with considerable accuracy. As soon as we come to *trees*, we are in great uncertainty, and a tree of Early Purple Guigne may give us two or three bushels, or not a tenth of this quantity. Where this fruit usually succeeds, two or three early trees will commonly afford all that a family may desire in connection with the strawberries—to be followed of course by succeeding kinds, such as Governor Wood, Coe's Transparent, Black Tartarian &c., and the best latter sorts. If these are standard trees, each one will occupy at least a square rod or more of ground, and a dozen trees will need more than twice the land needed for the strawberries,—unless an equal number of *dwarf* cherries are chosen, which would require only about one-fourth the space. Raspberries yield half as good a crop as strawberries, and if each stool occupies four feet square, a rod will contain sixteen plants, and six square rods a hundred, which, if of such varieties as the Doolittle and Orange, will give a copious supply to a family. Currants will yield more; but as they continue longer, the same number, one hundred, may be planted, requiring one-fourth less ground, or three square rods. Two square-rod, planted with New Rochelle blackberries, or two dozen plants, kept in compact form by pinching in, will give a quart or two daily for several weeks, about midsummer. One-sixth of an acre of dwarf pears or a hundred trees, if properly selected and well managed, will afford yearly from fifty to a hundred bushels of fruit, after allowing for occasional death and replacement of trees. An equal supply of summer and autumn apples may be obtained from one-half this ground, if planted with dwarf apples, which are more certain to grow and flourish, and less liable to accidents. Slow-growing sorts may be worked on the Doucan stock, and the stronger growers

on the paradise. This estimate is made on actual experiment, extending through a number of years. Two dozen peach trees, kept well cultivated and properly shortened-in, will give ample crops every favorable season, and need not occupy when thus managed more than twelve feet square each, or about one-tenth of an acre. If dwarf apple trees are omitted, standards for summer and autumn crops, will need four square rods to a tree, and half a dozen trees or a dozen at most, will give abundant supplies in most years for an ordinary family. Twenty-five to fifty trees of winter and spring sorts will usually afford plenty till the small fruits of summer make their appearance.

To recapitulate—the following will be about the required number, cost and area, in tabular form:

|                                 |                   |      |
|---------------------------------|-------------------|------|
| 1000 strawberry plants, on..... | 5 square rods say | \$10 |
| 10 cherry trees.....            | 10 do             | 3    |
| 12 do dwarf.....                | 3 do              | do   |
| 100 raspberry bushes.....       | 6 do              | do   |
| 100 currant do.....             | 3 do              | do   |
| 24 New Rochelle Blackberry....  | 2 do              | do   |
| 100 dwarf pears.....            | 27 do             | do   |
| 50 do apples.....               | 14 do             | do   |
| 24 peach.....                   | 16 do             | do   |
| 12 standard pears.....          | 12 do             | do   |
| 40 do apples.....               | 160 do            | do   |
|                                 | 258               | \$88 |

To which may be added a dozen grapevines, on 5 rods. 263 rods are about an acre and two-thirds—two acres would be ample room. Omitting the 40 standard apples, an acre would more than contain all. In every locality favorable to the growth of fruit, there is no way in which an equal amount of profit, wholesome food, and desirable luxury may be obtained from the same area.

But before going any further it is necessary to discriminate between the effects of good and bad cultivation. The results here pointed out could not be obtained by neglect. Unless the soil is kept clean and mellow; the small fruits generally and the dwarf trees will be an utter failure; and it would be better not to waste the time and labor for setting them. Those who cannot be induced to give proper attention to their trees, should plant the whole ground with apple trees, some of which may possibly live and bear, after a long and feeble growth. The suggestions here made are for the purpose of showing what may be accomplished under good management, and with a view of furnishing, not a mere occasional supply, but an abundance of fresh fruit at all times. Intelligent cultivators will of course alter and modify these numbers, to suit their own local circumstances and preferences.

The third question may be briefly answered, namely, how long after planting may we obtain crops? Strawberries set in spring will bear some the same season, and profusely the second year; dwarf pears, apples, and cherries, the third year and onwards, currants in a year or two, with an increasing amount for several successive years, and raspberries and blackberries the sec-



ond and third year. Grapes and peach trees begin to afford fruit in three years, and standard apple and pear trees in every four or five years, with a regular increase for many years subsequently. The time at which all fruit trees begin to bear will be greatly controlled by the varieties, soil, locality, and treatment received.—*Cultivator*.

## The Dairy.

### How to make Good Butter.

Extract from the report of the Committee on Butter of the Franklin Co. (Mass.) Ag. Society, made at their last winter meeting.

To make the *best* of butter, requires many prerequisites; but for all practical purposes, two main points cover the whole ground, viz., 1st, Neatness; 2nd, Skill. If any dairy-woman expects to make nice butter without the most *scrupulous neatness*, she will find herself greatly disappointed. From the moment when the rich and luscious fluid is first drawn from the cow's udder, to the time when the butter is ready for the table of the connoisseur, the least dirt, the least must or unpleasant flavour in the atmosphere of the room, and the least speck of foreign matter of any kind, must be absolutely and perfectly kept from it, during all its stages of manufacture. In fact, neatness is the *sine qua non* of the butter-maker's art. As well may we suppose that any of the laws that regulate the physical world will be reversed, as to suppose that good butter can be made without the most *scrupulous neatness in every particular*.

The second indispensable qualification of the perfect butter-maker, is *SKILL*—a word of quite extensive signification when applied to this subject. To acquire that skill requires a clear and discriminating judgment, a well educated and experienced mind, and a minute and accurate observance of all the physical laws which regulate the various conditions of the milk and the cream, while undergoing the transformation into butter. To be a successful butter-maker, therefore, requires no inconsiderable degree of education, intellect, and ingenuity. Let us, then, analyze this skill of the butter manufacture, and see what are its most important elements.

To begin, then, we must first have good milk, and to have good milk, we must have good cows, and to have good cows, requires a selection of the best breeds and of the best milkers from the best breeds, for that purpose. But that carries us into another department of agriculture, which we have no time here to discuss.

Assuming, then, that we have good milk, the next thing is to place it in shallow pans, (tin is usually preferred,) and in a degree of temperature neither very warm nor very cold. About 62 degrees Fahrenheit is supposed to be the

state of the air in which cream will rise most perfectly. And here let us remark, that every housewife who aims to make the *best* of butter, should have a thermometer constantly at hand, and should be a frequent observer of its condition.

If milk is kept in a temperature much below 62 degrees, the cream will not rise so rapidly and so perfectly. If kept in a state of the air much above 62 degree, the milk will become acidulated too quickly, and the quality of the cream will thus be injured. Equalization of temperature and a free circulation of pure air, are among the important elements of the butter-maker's skill. The time requisite for cream to rise naturally and perfectly, varies with the temperature, from 24 to 40 hours. As soon as the cream has all risen to the surface, it should be separated from the milk, and with much care; for the less milk that is taken up with the cream, the better will be the butter.

Churning is the next operation, and it is one that determines in no small degree the quality of the butter. If cream is put into the churn in a state much colder than 62 degrees of the thermometer, it will require much more time and labour to convert it into butter, and the butter will never be of as good quality. Let the cream then be brought to an even temperature of 62 degrees, and the often laborious operation of churning, especially in the winter, will become comparatively easy. If the cream is much warmer than 62 degrees the butter will be too soft, too white, and in most particulars, quite poor.

As soon as there is a perfect separation of the particles of the cream which make the butter, from the more watery parts of the milk, let the butter be taken from the churn, and then comes the quite difficult and delicate operation of working over and salting it, both of which require great accuracy and judgment. For if the milk is left and mixed in with the butter, one thing is sure—the butter will never have that compact and smooth appearance that is one of the sure indications of good butter; and what is yet more important, butter left in that condition will not keep long without becoming musty or frowy. Every one then that aims at making the best of butter, must separate entirely the particles of milk from butter, immediately after churning. Washing the butter with cold water is practised by some, but the most skillful butter-makers complete the separation of the solid from the fluid portions by manipular labor alone.

The form in which butter is prepared for the table or for market, is one indication of the skill of the maker. Butter put up in small cakes of oval form, and stamped with a device of flowers, leaves or diamond figures, is the most beautiful, and seemingly adds to the good flavor of the article. In order to sell for the highest price

It should always be put up in that form, or in oblong pieces of about a pound each.

Such are the main requisites of the skilful manufacture of good butter, without which we venture to assert with great confidence, that the best of butter cannot be made.

Does any good housewife, when she has read this report, say "I knew all that before?" If she does, then we ask her with no small degree of assurance, Madam, do you *practice* all these rules for making good butter? If you do, why is it that so large a proportion of the butter that is sent to our markets is so very poor?

HENRY W. CUSHMAN, Chairman.

### The Apiary.

The following remarks on *Foulbrood*, a not uncommon, and often fatal disease among Bees, are taken from "Western Editorial Notices," in the last number of the *Rural New Yorker*.

Bee-keepers, and among them the most eminent, unite in regarding and characterizing Foulbrood as the most grievous evil that affects the apiary. It is doubtless the case that most of your readers—especially such as keep bees, know the character of this dreaded disease among bees, but there may be some who do not.

Dzierzon says there are two kinds of Foulbrood. One is curable and rather innocuous; the other is pestilential and incurable. Both are contagious. The curable kind has this character. The unsealed larvæ die while yet lying coiled on the bottom of the cell, become putrid, and dry up on the bottom into a crust-like substance, which may be easily removed. Such of the brood in the cells intermixed with those diseased, as does not perish before capping, for the most part remains healthy and matures in due time; though it is a fact that exceptional instances of putrid nymphs in such capped cells are found.

The incurable foulbrood is said to be the converse of that described above. The brood does not perish until after it has been capped and begun to undergo its metamorphosis. The putrid mass is not then found at the bottom of the cell, but on the horizontal portion of the cell walls. It is brownish and viscid; and in consequence of the heat of the hive and the admission of the air through a small orifice in the sunken cap, it dries up as a hard black crust which the bees cannot detach, and which they can only remove by totally destroying the cell.

#### INDICATIONS OF ITS PRESENCE.

The author quoted above says, when among a healthy brood a few cells are found here and there, containing a smeary, viscid matter, or a grayish-brown or black, crust-like substance—the dried remains of larvæ or nymphs—it may be regarded as the unmistakable evidence of

the existence of foulbrood. If the larger number of cells are in this condition, this disease must have prevailed in the hive for sometime and have attained an aggravated stage. A disagreeable fetid odor issues from the entrance to the hive, where this is the case.

Colonies affected with this disease do not build new comb in the spring, when other colonies are engaged in such labor, or do so only if they are populous, and pasturage is abundant. If the combs be pressed asunder we shall see that the brood is not placed regularly and uniformly; and on cutting out a piece of such comb, ocular proof of the existence of the disease will be found in the putrid matter contained in the cells.

#### IT IS CONTAGIOUS.

Herein lies its danger; therefore this caution. And I give this caution regardless of the interest of any one who may have long-bitted or any other kinds of bees to sell, and whose apiary may have been, or may be affected by this disease; or who may be near an apiary that is or has been affected. This caution is given with especial reference to such cases. For all these men know that this disease is contagious—that it spreads from hive to hive, and from apiary to apiary; that, once having a foothold, it retains it and extends its influence, if effectual means are not properly taken to eradicate it. The brood is not only destroyed by this disease, but the cells are contaminated and the contagion spreads rapidly thereafter. This disease is known to exist in the Eastern States—is known to have destroyed many large and profitable apiaries—is known to have increased the risk to, and diminished the number engaged in bee-keeping. In some localities this husbandry has been abandoned because of this disease.

The point is, then, that the bee-keepers of the West are in danger of importing it with their importations of Italian bee. For it is well known that these bees, with formidable bills, continue to be sent hither in large numbers, at the rate of five to eight dollars per queen. And with each shipment is usually more or less honey; and with the honey, if it happens to be from infected colonies, comes this foulbrood as sure as fate. Is it not a pretty large risk? When it is asserted that the bee-keeper may convey it from hive to hive, it after performing some operation on a diseased stock he proceeds to work at a healthy one, without first carefully washing his hands and such instrument as he may have been using, it is safe to distrust whatever comes from apiaries that have been affected with this disease.

It is proper for me to say, that I do not write this caution for the purpose of injuring anybody's business, nor with a view to build up any man or class of men dealing in the long-billed bees referred to, but simply to urge that the most rigid care be taken to prevent the introduction of this disease among the apiaries of the West. Bee-



culture has become too large an interest here to allow it to be shipwrecked by the carelessness or recklessness of any man or body of men. The revenue it brings to the Western husbandman is annually increasing. Let it be guarded in this respect.

We pray our Eastern brethren to be careful what they send in response to orders; and let Western men know that they are ordering where they will get only what they want.

#### HOW TO GET RID OF THE DISEASE.

Smother and bury the bees, and burn the hive containing the colony and its contents, as soon as the disease is discovered. There are remedial measures recommended to be taken; but none so efficient and safe if as cheap as the above,

### Wax and Honey.

The prevalent opinion respecting the origin and nature of wax and honey, as expressed in many treatises on bee-culture, and as implied in the definition of the terms as given by the dictionaries, are essentially erroneous. The current impression derived from these sources, is, that wax is contained in the honey or pollen, and is simply extracted by some process in the stomach of the bee; while honey is supposed to be made from the nectar of flowers. Precisely the converse of this is the fact.

1. Wax is a product elaborated by the bees. A simple experiment will suffice to demonstrate this conclusively. If bees be fed with a concentrated solution of loaf sugar and then confined in a box, we shall, in the course of twenty-four hours, find between their abdominal rings thin scales or plates of wax, such as they use in building their combs. Now, probably no one will undertake to maintain that loaf sugar contains wax. It contains only the elementary ingredients of that substance, carbonic acid, hydrogen, and oxygen—which become separated in the body of the bee, and re-combined in different proportions and relations, thus resulting in the formation of wax.

2. It is otherwise in the case of honey. This is in no proper sense the product of the bees, but merely a substance collected by them from the boundless stores supplied by nature.

a. The matter collected by the bees undergoes no change before it is deposited in the cells. The nectar of flowers and freshly gathered honey are, in all their constituents and properties, one and the same substance. Both have a sweet taste and an aromatic flavor. If we sip nectar from the calyx of the honeysuckle, we shall find that it has precisely the taste of freshly gathered honey. When I analysed the wax plant (*Hoya thuya*), which exudes in large drops from the calyx of the flower, I found it was composed of sugar, gluten, and an aromatic substance—which are the constituents of common honey in its pure state.

I fed a colony with a solution of sugar colored with indigo, scented with lavender, and diluted with milk. When the bees had carried this into the cells of a new comb, no difference could be perceived between the contents of the cells and those of the feeding-box—they had the same color, the same taste, and the same smell.

b. If honey or the nectar of flowers remain in the cells, it will in process of time undergo a change. But this change is produced spontaneously, and not by the intervention of the bees, except merely so far as the internal heat of the hive may tend to accelerate it. It results, first, from the gradual evaporation of the aqueous particles contained in the nectar of fresh honey, till a certain degree of consistence is attained; secondly, from the still more gradual dissipation and loss of its agreeable aroma; and, thirdly, from the ultimate conversion of the more saccharine cane sugar, which constitutes an ingredient of the nectar of flowers, into the more insipid grape sugar—a change which all honey undergoes with the lapse of time.

DONHOFF.

### Miscellaneous.

**BENEFIT OF BOOKS.**—The great multiplication of books is sometimes spoken of as an evil, but this is true only in one sense—viz., so far as they are superficial or trashy. When there is a prevalent propensity to authorship, it is a natural incident that there will be a great deal of frivolous writing, or that the same ideas will be often reproduced. The effect of the periodical literature of the present day on the public mind is, in my judgment, not favorable to a muscular tone. Newspapers, literary magazines, and the like, must, in order to please popular taste, consist of light but various material. They are suggestive of many interesting inquiries; but this is of very little value to any but systematic thinkers; and generally the effect is only to distract the mind and impair a habit of consecutive thought. It is true that those who think much are also great readers, even of this fugitive sort of productions. This is partly for relaxation, but also for the new ideas which may be derived from a heterogeneous source, when there is a strong power of assimilation. Such reading may be compared to a conversation of the gossiping kind, which may be supposed to be of no great advantage; yet Sir Walter Scott said he never met with any man from whom he could not learn something in conversation. So of books: it has become almost a proverbial saying that there is none that does not contain something that is valuable. Macauley's History of England indicates an omnivorous habit of mind; materials are turned to valuable account which we should hardly have supposed would have attracted the

attention of any one but a frivolous antiquarian: old songs, obsolete plays, pamphlets, newspapers, traditional proverbs—and these not hunted up merely for the occasion (for that would have been impossible), but constituting a familiar lore. The chief value of Plutarch's Lives I consider to be the affluence of anecdotes, apophyegms and slight incidents, which were condemned by state-ly historians, and which he was compelled to obtain by a process of filtration, involving research into a vast amount of gossiping productions, or what were so esteemed, and had not sufficient merit to reach us, except in the excerpts penned by this most erudite of ancient writers.—A. H. DANA.

**INTRODUCTION OF THE POTATO INTO THE UNITED STATES.**—MESSRS EDITORS.—To answer the inquiry of "A Co. Gent," of New Britain; Ct., as it is put, would be to say that the potato was introduced into America by the Creator "in the beginning" as it is one of the indigenous productions of South America. But the question probably is, when it was introduced into the United States? Answering that question in full will also explain why it is called the Irish potato, as was perhaps the case years ago more than it is now with us, and still is at the South in distinction from the sweet potato.

The only authority I know of in relation to the matter is Belknap's History of New Hampshire, and as the book is not common, I will give, as briefly as possible, the substance of that historian, and if there is further or other information upon the matter, we shall be glad to receive it.

In 1719 a large number of emigrants came to this country from the north of Ireland and settled a township which they called Londonderry. They were called Irish, and there was no little antipathy felt toward them, which would have been very foolish even if they had been natives of Ireland, but they were from a colony of Scotch Presbyterians that had settled in the province of Ulster, Ireland, in the reign of King James I. They had a thirst for civil and religious liberty which their situation in Ulster did not satisfy, and nearly the whole colony removed to America. About one hundred and twenty families came. One hundred families came to Boston, and the rest landed on the coast of Maine. Of the former, about sixteen families were those who made the settlement of the town of Londonderry. The historian referred to says: "These people brought with them the necessary material for the manufacture of linen; and their spinning wheels, turned by the foot, were a novelty in the country. They also introduced the culture of potatoes, which were first planted in the garden of Nathaniel Walker of Andover. They were an industrious, frugal, and consequently thriving people." Hence these people being called Irish, the potatoes which they introduced were called Irish potatoes.—A. B. B., in *Country Gentleman*.

**SCARCITY OF PURE ARABIAN MARES.**—The Arabs' love for their mares, and the jealous care with which such animals are treasured in the East, have formed the subjects of many an interesting story. There is no difficulty in obtaining any number of Arab stallions, for example, of the very purest blood; but it is next to impossible to procure an Arabian mare of very high reputation. A modern writer on the subject tells us that it is even considered a crime to sell one under any circumstances; and in proof of the resolute opposition to the practice, a case is related as having lately occurred in Calcutta, where some Arabian dealers had sold their horses, and in consequence of a heavy bribe one was induced to part with his mare. Some weeks after, when the dealers had already gone homeward, the senior of his party was observed to have returned to the city, a distance of several hundred miles; he lurked about for some days; subsequently it was discovered that he had inquired for the stables where the mare was kept; she was found poisoned, and he had disappeared.

**A RAIN GLASS.**—The following may be depended upon as a rain glass: I have used it for months. Get a common pickle bottle, such as is sold at any Italian warehouse; fill it with any kind of water, to within two or three inches of the top; plunge the neck of an empty Florence oil flask into the pickle bottle. Before rain the water will rise two or three inches in the neck of the inverted flask—often in three or four hours. If the weather is settled for fair the water will remain not more than half an inch high, for days, in the neck of the flask. It never fails to foretell rain; and to-day, July 15, rose as high as the rim of the pickle bottle, in the neck of the flask. It may stand in or out of doors, in sun or shade, and the water never needs changing so long as it can be seen through. Mine is now green through long standing. The oil flask must be cleansed before the neck is plunged into the water. Soda and warm water will cleanse it of oil.—THOMAS ZULLER.—Rose Cottage, Kennington-cross.—*Athenæum*.

**MARAUDING CATTLE.**—Cattle may be educated to do almost anything. A quiet cow may be converted into a skilful jumper in a single season. The first requisite for such training is short feed, resulting from over stocking. The second is low fences; and the third, tempting crops of corn beyond these low fences. In the spring, grass is usually good, corn and other crops are small and uninviting; but during the midsummer periods, when the pasture is dried up, the process often begins. One or two rails are accidentally blown from the fence; the quiet and orderly animals stretch their heads over to reach a morsel of the tall grass; they throw down accidentally two or three more rails, and finally leap over. The owner drives them out



as soon as they have learned the difference between delicious food on one side and short commons on the other, and puts up a rail. They have already learned to leap a little, and the next day they improve and go a rail higher. Another rail is added, and the process is repeated until they become quite expert.—*Country Gentleman.*

**ABD-EL-KADER'S RULES FOR A HORSE.**—The following are the rules laid down by Abd-el-Kader for indicating the points of a horse of pure race. He ought to have three things long, three short, three broad, three pure. The three long are the ears, the forehead, and the fore-legs; the three short are the bone of the tail, the hindlegs, and the back; the three broad are the forehead, the chest, and the quarters; and the three pure are the skin, the eyes, and the feet. He should have the withers high, the flanks fine, not fleshy, the tail well furnished near the root, the eye inclining as if to look at the nose, the forelock full, the nostrils wide their cavities entirely black (if partly white it is a sign of inferiority), the fetlocks small, the hoof round and hard, the frogs hard and dry. He should be able to drink from a stream level with the surface on which he stands without bending the forelegs. The colours most prized are a dark bay or chestnut (the latter esteemed the latest), brown or black. Black are, however, thought less safe on rocky ground; white are considered soft. Roan, dun, and iron gray are little esteemed. A blaze, if all down the face, is approved, so are three white legs; but the rules on this matter are very fanciful. All these doctrines are supported by an infinity of proverbs, poetical quotations, and religious maxims, but it will be seen that they accord generally with our own ideas. Much importance is attached to a well lying shoulder; and to breadth of chest, both as a security against interfering and as giving room for the lungs. A practical rule for recognising the development of the forehead is to measure the distance from the extremity of the bone of the tail, along the back to the centre of the withers, then from that along the neck and crest, down the face to the upper lip. If the two measurements are equal, the horse will prove good, but of middling speed. If the length is greater behind than before, the animal wants power. If it is greater before than behind, he is excellent, and the difference in measurement the greater his superiority. The count d'Aure, late chief of the School of cavalry, and now inspector-general of the imperial studs, assures Gen. Daumas that he has tested this rule in more than a hundred cases, and found it unailing.—*London Review.*

**SIR ISAAC NEWTON AND HIS CATS.**—A human being weighing a general principle, must call up before his mind all that is to be said for and against it. And he may quite overlook some

important reason, on one side or other. He may quite forget something so obvious and familiar, that a child might have remembered it. Or he may fail to discern that some consideration which mainly decides his judgment is open to a fatal objection which every one can see is fatal the instant it is stated. Was it not Sir Isaac Newton who had a pet cat and kitten? And did not these animals annoy him while busy in his study, by frequently expressing their desire to be let out and in. The happy thought struck him that he might save himself the trouble of often rising to open his study door for their passage by providing a way that should always be practicable for their exit or entrance. And accordingly the great man cut in his door a large hole for the cat to go out and in, and a small hole for the kitten. He failed to remember what the stupidest bumpkin would have remembered, that the large hole through which the cat passed might be made use of by the kitten too. And the illustrious philosopher discerned the error into which he had fallen, and the fatal objection to the principle on which he had acted, only when taught it by the logic of facts. Having provided the holes already mentioned, he waited with pride to see the creatures pass through them for the first time. And as they arose from the rug before the fire, where they had been lying, and evinced a disposition to roam to other scenes, the great mind stopped in some sublime calculation; the pen was laid down; and all but the greatest man watched them intently. They approached the door, and discerned the provision made for their comfort. The cat went through the door by the large hole provided for her, and instantly the kitten followed her *through the same hole!* How the great man must have felt his error. There was no resisting the objection to the course he had pursued, that was brought forward by the act of the kitten. And it appears almost certain that if Newton, before committing himself by action, had argued the case; if he had stated the arguments in favour of the two holes, and if he had heard the housemaid on the other side, the error would have been averted.—A. K. H. B. in *Good Words.*

**THE GREAT GREY SHIRKE.**—Fierce and powerful as this bird is, it holds the falcon in the greatest terror, and is gifted with so true an eye for its enemy, that it can perceive a falcon when at an immense distance. Taking advantage of this peculiarity, the fowlers who set their nets for falcons always take with them a grey shrike, and after setting their nets, fasten the string to which the bird is tied to a peg near the nets.—A little turf hut is built as a place of refuge for the shrike, and a small mound or hillock raised, on which it perches. The fowler then retires to his own little hut, places the strings which draw the net within reach of his bird,

and watches the shrike out of a small window which commands the mound where it is perched. Feeling secure that the shrike will not suffer a hawk to come within sight without giving notice, the fowler takes out his netting or other sedentary work. Hundreds of birds may pass over the net without the shrike giving the least alarm, but as soon as it can see a falcon, it flutters about, gets uneasy, and at last begins to kick and squall with terror. Roused by the sounds, the fowler jerks some strings communicating with perches on which living pigeons are perched, and the flutter thus occasioned attracts the falcon's attention, and induces him to stoop for a prey that appears so easy. As the foe approaches nearer, the shrike's terror increases, and as the falcon swoops at the pigeons, the shrike screams for fear and runs for shelter under the tiny hut. The movement is a signal for the fowler, who draws the strings of his net and then closes the falcon as he makes his dart on the pigeons.—*Routledge's Illustrated Natural History.*

**TAKE CARE OF YOUR HARNESS.**—More damage is done to a harness during the rainy weather of early and late winter, than during all the rest of the year. Saturated with water covered with mud, and often frozen stiff, so as to almost break when bent, in necessary handling. Unusual care should be taken to keep it well oiled and hung up in proper shape when not in use. Thus treated, it will not only last many times longer, but look infinitely better than when neglected in the usual manner. As to the kind of oil we know nothing better than neat's foot or the daubing used by tanners. To give the black color characteristic of new leather, a little lamp black may be added, without detriment, though it is better not to use this second going over. Before putting on the oil, however, there are two important considerations which must be observed—cleanliness and dampness. The necessity of the first is obvious, and the last is not less important, since the oil cannot penetrate the leather and make it soft and pliable if put on when it is dry and hard. One of the best ways to give the leather the required degree of moisture is to wrap up the several parts of the harness in wet cloths previous to oiling. But this trouble is unnecessary where washing has been resorted to for cleaning, as the oil may be applied before the leather is entirely dry. The oil should be rubbed in briskly with a brush or cloth, so as to ensure its absorption. Varnish should never be used as it closes the pores and renders the penetration of the oil more difficult. Vegetable oils are hardening in their effects and should never be used for that reason. Finally let the application of oil be as frequent as needed, not once a year as is the rule with some, or almost never, as is the practice of many.

**EVIL NOT A NECESSITY.**—As surely as God is good, so surely there is no such thing as neces-

ary evil. For by the religious mind, sickness and pain, and death are not to be accounted evils. Moral evils are of your own making; and undoubtedly, the greater part of them may be prevented. Deformities of mind, as of body, will sometimes occur. Some voluntary castaways there will always be, whom no fostering kindness and no parental care can preserve from self-destruction; but, if any are lost for want of care and culture, there is a sin of omission in the society to which they belong.—*Robert Southey.*

---

## Editorial Notices, &c.

---

### Death of the Hon. Adam Fergusson.

It is our painful duty to record the death of this estimable gentleman and distinguished agriculturist, which took place suddenly, September 24th, at his residence, Woodhill, near Hamilton. For the last two years Mr. Fergusson was unable to take any active part in public life in consequence of an attack of paralysis, but he was not incapacitated from inspecting the operations of his farm, and, what he always took a particular liking in, the progress of his live stock, and the quiet enjoyment of the company of a friend.

Mr. Fergusson was a native of Scotland and descended from a family of great respectability and influence. He studied for the law in the University of Edinburgh, and became a writer to the signet. Having however a strong propensity for country life, and coming into possession of landed property, he soon distinguished himself as an earnest student and promoter of agriculture. We have often heard him relate the pleasure and advantage he derived from the lectures of Dr. Coventry, the first professor of agriculture in that distinguished seat of learning, also from those of Professor Dick, the founder of the world-renowned veterinary school of Edinburgh. Mr. Fergusson also spent some time with two or three extensive farmers and breeders in the counties of Northumberland and Durham, where he formed an acquaintance, which ripened into an intimate friendship with that celebrated agriculturist John Grey, Esq., of Dilston, extending over a lengthened period of more than half a century. It was



here that Mr. Fergusson acquired a taste for Durham Cattle, or, as they are now usually called, "improved short horns;" a department of husbandry to which he devoted himself with distinguished success, both in Scotland and in Canada.

In 1831, Mr. Fergusson came to Canada, and purchased an extensive tract of wild land in the Wellington District, now forming the flourishing and well-farmed township of Fergus. His clear and penetrating mind foresaw the advantages which that part of Canada even then offered to enterprising industry, and he accordingly wrote a series of letters, which were published by Messrs. Blackwood of Edinburgh, a book that elicited much enquiry and conveyed valuable information to such as were seeking new homes in the then literal wilds of Canada. In 1842 he was appointed by the Crown to a seat in the Legislative Council, where by his frank and straightforward course he commanded the respect, if not the confidence, of all parties. In 1846, Mr. Fergusson, in connection with Colonel E. W. Thomson, and a few others, succeeded in forming the AGRICULTURAL ASSOCIATION OF UPPER CANADA; the first exhibition of which was held in Toronto, in the fall of that year; Mr. Thomson, with whom the idea first originated, being President, and Mr. Fergusson delivered the Address. Of that association from its commencement to the period of his death, he was a constant and zealous supporter. He was also a member of the Board of Agriculture from its formation, and the originator of a scheme for giving to young farmers sound practical instruction in the veterinary art, with an ultimate view of establishing in Upper Canada, a veterinary school; a project that has already been commenced by Mr. Smith, a licentiate of the Edinburgh college, under the patronage of the Board of Agriculture.

Mr. Fergusson was one of the oldest members of the *Highland and Agricultural Society of Scotland*, having been elected, we believe, as early as the year 1806. He was among the first to introduce pure bred cattle into this province, and he always had, to the day of his death, a select herd of Short horns, a breed to which he was, we may say, enthu-

siastically attached; and for the dissemination of which he had bred and sold upwards of sixty male animals, exclusive of cows and heifers. Among the many proofs of his ardent love of rural improvement, particularly of cattle, it may be mentioned that he gave annually a silver cup, and two medals, the former for the best grade cow from a Short horn bull, and the latter for the two best pair of Domestic Fowls, exhibited at the Provincial Show.

Our good and venerable friend has been removed from a sphere of action, which by his virtues he adorned, and blessed. The writer of this hasty notice had the pleasure of spending a day with him at his picturesque retreat, Woodhill, only a fortnight before his decease, and found him as usual full of desire and hope in the great work of agricultural and social improvement. He was looking with anxious interest to the results of our forthcoming Provincial Show, during the holding of which he was summoned to another and, there is good reason for hoping, a better world. The members of the Provincial Agricultural Association gave expression, at the annual meeting on the show ground, to their esteem for his memory, by passing in solemn silence an appropriate resolution. Mr. Fergusson had entered, we believe, on his 79th year. The memory of the just is blessed.

#### FOR SALE!

**Ayrshire Cattle, Leicester Sheep, and Berkshire Pigs.**

THE Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Specimens from his *Prize Herd* will be on Exhibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.

Aug. 30th, 1862.

6-mos.

#### THOROUGH-BRED STOCK FOR SALE.

THE Subscriber has for sale DURHAM and GALLOWAY CATTLE, LEICESTER, COTSWOLD, and LINCOLNSHIRE SHEEP, Male and Female 10 Durham and Galloway Bull Calves—price from \$100 to \$200; 30 Shearling Rams, weighing from 230 to 285 lbs. each—Price from \$50 to \$100 each.

JOHN SNELL,

Edmonton P.O., C. W.

Four miles from Brampton Station G.T.R.

## Horse Infirmary and Veterinary Establishment, Corner of Bay and Temperance Streets, Toronto, C. W.

A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

And also begs to announce that Veterinary Medicines of every description are constantly kept on hand:—Such as, Physic, Diuretic, Cough Cordial, Tonic Condition, and Worm Balls and Powders. The constituents composing the Cough-balls, have been found (by Professor Dick, of Edinburgh) most serviceable in alleviating many of the symptoms of Broken-wind or Heaves in Horses. Colic Draughts, &c., a mixture which owners of Horses should always have beside them.

Liniments for Sore-throat, Sprain, Curb, Spavin, Ringbone.

Blistering Ointments. Liquid and sweating Blisters.

*Horses bought and sold on commission.*

Toronto, Aug. 30th, 1862.

## TO BE SOLD BY AUCTION,

*On Thursday, Oct. 16, 1862,*

THE well-known Herd of NORTH DEVON CATTLE, consisting of more than forty head of Cows, Bulls, and Heifers; one hundred and seventy West and Southdown Ewes and Rams; pure blooded Essex Pigs, in pairs fit for breeding.

Catalogues of description, with pedigrees, may be had fourteen days before the sale, on application at the office of the *Galt Reporter*, if by letter, prepaid. Credit of 12 months may be had on approved endorsed paper.

## THE SPLENDID FARM,

Consisting of upwards of THREE HUNDRED ACRES, to be sold by private bargain, on accommodating terms.

DANIEL TYE.

County Waterloo, Wilnot, August 1862. td

## BOARD OF AGRICULTURE.

Office in the New Agricultural Hall, corner of Yonge and Queen streets, Toronto.

HUGH C. THOMSON,

Toronto August, 1862.

*Secretary.*

## Contents of this Number.

|                                                             | PAGE. |
|-------------------------------------------------------------|-------|
| Management of Dairy Stock.....                              | 609   |
| Draining and Ashes.....                                     | 609   |
| The Field Bean and Rotation of Crops..                      | 610   |
| New York State Agricultural Show.....                       | 611   |
| The Grain Aphis, Dr. Fitch on.....                          | 612   |
| Fat versus Lean, or the Obese system of Feeding Cattle..... | 616   |
| Directions for the Cultivation of Flax....                  | 618   |
| Short Horn Breeding.....                                    | 619   |
| Steam Cultivation at Woolston.....                          | 621   |
| On the Feeding Value of Straw.....                          | 622   |
| Steam Cultivation.....                                      | 623   |
| The Autumnal Fallow.....                                    | 624   |
| Pastures for Milch Cows.....                                | 626   |
| The Lower Canada Provincial Exhibition                      | 627   |
| The Radish as a Field Crop. ....                            | 628   |
| Rot in Cattle .....                                         | 629   |
| Sale of Stock at Guelph.....                                | 630   |

## HORTICULTURAL :

|                                      |     |
|--------------------------------------|-----|
| Hamilton Horticultural Society ..... | 630 |
| Advice on Planting Fruit Trees.....  | 631 |

## THE DAIRY :

|                               |     |
|-------------------------------|-----|
| How to make good Butter ..... | 633 |
|-------------------------------|-----|

## THE APIARY :

|                                                            |     |
|------------------------------------------------------------|-----|
| Foulbrood, its indications, and how to get rid of it. .... | 634 |
| Wax and Honey.....                                         | 635 |

## MISCELLANEOUS :

|                                                                                                                   |     |
|-------------------------------------------------------------------------------------------------------------------|-----|
| Benefit of Books, Introduction of the Potato into the United States, Scarcity of pure Arabian Mares, &c., &c..... | 635 |
|-------------------------------------------------------------------------------------------------------------------|-----|

## EDITORIAL NOTICES :

|                                      |     |
|--------------------------------------|-----|
| Death of the Hon. Adam Ferguson..... | 638 |
| Advertisements. &c.....              | 639 |

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

Is published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE

# Canadian Agriculturist.

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, NOVEMBER 1, 1862.

No. 21.

## Hints for November.

The agricultural year in this part of the world may now be considered almost closed. What little remains to be done consists in finishing the getting up and storing away of root crops, a work that should now be completed without delay. Ploughing should be proceeded with as long as the ground continues unfrozen, and every effort made to give a finish to the operations of the farm before stern winter finally sets in. The severe and protracted drought of the spring and early portion of summer seemed at the time almost to annihilate the farmer's hopes, but in consequence of subsequent rains and genial temperature the result of his labors and care has far exceeded the most sanguine expectations. In many parts of the Province the crops in general have proved abundant, and in none has any thing like a failure been experienced; a circumstance that imperatively calls for gratitude to the bountiful Giver of all good.

The farmer in this climate, whatever perseverance he may have exercised, always finds enough to do at this season to bring his operations to a proper and satisfactory conclusion by the time that the advent of winter actually takes place. Too many have not safely stored their roots or completed as much ploughing as is desirable before that imperious master—frost—puts a stop to most out of door operations. The ploughing deeply, and however roughly heavy land, so as to expose the largest amount of surface to the action of frost and snow, produces a vast benefit

on the soil in a chemical as well as mechanical point of view, and materially diminishes the labour of spring in procuring a suitable seed bed for next year's crops. On some soils autumnal ploughing will save at least twenty-five per cent of spring labour, besides the enriching of the land without any outlay to the farmer. The soils least benefitted by these means are such as are naturally loose and sandy, the particles of which will often run together before the time of spring seeding, and become almost as compact as though they had not been operated on with the plough.

Another subject demands the farmer's attention at this season, namely the scouring, when necessary, of surface drains. Before the setting in of winter all obstructions to be found in ditches and open furrows should be removed, that the large amount of water occasioned by the melting of the snow and the rains of spring may readily find an exit, and thus present the serious injury so often seen done both to the soil and the young crops by the action of stagnant water. Winter wheat is often seriously injured from negligence in this matter. At present, and in the nature of things it must in a new country continue so for some time to come, the surplus of our fields is often very irregular and uneven, and the water which accumulates in the depressions of our fields, proves highly detrimental to the cultivated crops. Underdraining and getting a smooth surface must necessarily be the work of time, involving too

much thought, labor, and expence. But it is obvious to every observer of rural affairs how much is commonly neglected to be done, that might have been accomplished without involving much, either of time or outlay. A man with a spade, if nature or art has provided an outfall, may often in a few hours relieve large portions of a field of most if not all of their stagnant surface water, by deepening at places the furrows made by the plough, or such portions of the ditches or natural drainage as are too shallow or partially obstructed. Wheat fields should be carefully examined with this object in view before the ground becomes permanently frozen. This would be a cheap way of benefiting both the soil and the crop.

Stables, byres and yards should be now examined and such repairs effected as are necessary for the production and thrift of live stock, which frequently suffer as much from wet and cold draughts as from irregular and inadequate feeding. The farmer should always bear this truth in mind, that all our domesticated animals thrive better on a smaller amount of food when kept dry and warm, than with a larger quantity however nutritious, under opposite conditions. Notwithstanding the shortness of the hay crop, what with the abundance and quality of straw and roots, cattle if properly protected, kept clean and dry, and regularly fed, may be carried through the approaching winter in a healthy and improved condition. The greatest care should now be taken that chaff, straw, &c., be properly husbanded, and that turnips, carrots, mangels, &c., be secured stored away so as to be available for use not only through the winter, but a portion reserved by what is often as pinching a time as any, early spring.

### The Wire Worm.

*To the Editor of the Agriculturist.*

DEAR SIR,—Permit me, through your paper, to inquire of you and your readers the best means to be adopted in order to destroy the wire-worm, or at least to prevent its ravages, or if there are any means of doing so.

My crops have for the last few years been almost totally destroyed by it; and the wheat which is now growing on my farm, in one field more especially, is being cut off very fast by it, so much so that I believe it will be all, or nearly all, gone before the frost sets in, and to plough it up to sow spring wheat, barley, &c., believe would be useless, as such would in all

probability share the same fate. I have tried many ways to banish it without effect. Different ways and plans have been suggested to me by various individuals, some towards its eradication, and some again as a means only of preventing it working at the wheat plant. Some of these I have tried which I found to be of no service. Now, for general information, I submit to you the following, all of which I have heard and seen recommended:—First, the propriety of rolling the wheat in the fall and spring with a heavy metal roller. Second, the propriety of ploughing in the fall and summer, following the next season, keeping the land clear of weeds, &c. Third, propriety of sowing lime, salt, or soot. Fourth, the propriety of growing buckwheat on the fallow, and ploughing it down when in bloom. Fifth, the propriety of sowing soda-ash a short time before sowing the wheat.

With respect to the first question, rolling, I have heard it mentioned as a means of preventing the worm injuring the wheat; in fact I have heard some of my neighbours who have tried it say that such entirely stopt its progress. How this can be the case (if it is so) seems a mystery to me. It may be in consequence of the soil being pressed tightly together and being made hard about the roots of the plant. I have noticed that the looser spots in the field are always worse affected than the harder ones.

As to the second question—ploughing in the fall, &c.—suggested as a means of starving the worm out, I have ploughed in the fall and found it to be of no service to spring crops, that is as far as the worm is concerned, for the barley and the spring wheat which I sowed on it were as much destroyed as on a piece in the same field which was not ploughed until the spring. But summer-fallowing the next season, after the fall ploughing, may starve them out; and would it not be a good plan, after summer-fallowing, instead of sowing fall wheat, to let it stand over and sow spring wheat? By that means a person could give it a second fall ploughing without much loss.

As to the third question—sowing lime, &c.—some recommend one and some another of these.

As to the fourth—growing buckwheat—I have tried this without effect, but the buckwheat was a poor crop, which may account for the failure.

As to the fifth—sowing soda-ash—I have seen it highly recommended in a Belfast news paper as being an effectual cure.

By answering the above questions, or making any suggestions that may be beneficial towards the eradication of this pest—wire-worm—you will confer a great favour on your humble servant, and let me know by what means, if there are any, I could save the crop which is now in the ground. Any information from you or any of your readers on this topic will be thankfully received.

By giving the above an insertion in your paper you will much oblige,

Yours, &c., AGRICOLA.

Chinguacousy, 27th Oct., 1862.



[We are not acquainted with any specific or absolute method of exterminating the wire-worm, that will be effectual under all circumstances. Most of the means mentioned by our correspondent, although they appear to have failed with him, will, one or other, be found generally to *mitigate* the ravages of this destructive pest. Our correspondent's case appears to be an extreme one, and nothing less, perhaps, than the burning of the soil, will effect a thorough cure. Old pastures, when broken up, are peculiarly liable to have their cultivated crops, for several seasons, injured, and sometimes totally destroyed by the wire-worm; and this is not unfrequently the case on badly tilled land abounding in weeds, on the roots of which, as well as those of cultivated crops, the larva of this beetle finds a subsistence. Several expedients for destroying it in gardens may be readily applied, and with, to a great extent, certain success; such as burning, deep and frequent digging, hand-picking, &c., appliances generally too expensive and tedious on a large scale. In raising hops in England, it is not uncommon to put around the hills in spring the first year after planting a few cut potatoes, for which the wire-worm has a particular liking. These potatoes are taken up, and, if need be, others planted, every few days. In this way count less numbers of the larvæ are captured, and the roots of the young hops preserved. Our correspondent will find in the 12th volume of the *Agriculturist* for 1860, pp. 29, 46, 64, an essay on the wire-worm, treating the subject somewhat in detail. We shall be happy to hear from any of our readers who have had experience of, or made observations on this matter, and shall be happy to embody their remarks in a future article or articles at the earliest opportunity.—Ebs.]

### Short-Horns as Show Stock.

A disposition to lay on fat rapidly, leading to a more than usually early maturity, is a prominent feature in the improved short-horn. This desirable quality is, however, often grossly abused, especially in the case of stock intended to compete at the principal shows. The practice may have originated, perhaps, in a desire on the part of breeders to prove the extraordinary fattening properties of the breed at a time when it was fighting its way into public estimation, and when it had to contend against prejudices in favor of other established breeds.

Whether this supposition be correct or not, it is at least a well-known fact that almost every person who intends to show his short-horns in public considers it necessary to prepare them for exhibition in a very different manner from the course which would be followed were the animals to be kept at home solely for breeding purposes. A very liberal milk diet is supplied in the case of young bulls and heifers for many months after they would have been weaned under ordinary circumstances; and not only are they amply provided with that very nourishing description of food, but they are also crammed with cake, boiled barley, malt, even double X, and in short, every kind of food which is calculated to swell out their proportions, and cover every point with flesh and fat. A similar system is pursued in the case of older stock, and thus the "breeding classes" at our shows usually present an array of animals which would fill appropriately the stalls at a Christmas exhibition, but which are sadly out of place when shown as "breeding" animals. We have frequently seen butchers, in a mixed show of breeding and fat stock, selecting the cow or heifer which had been awarded the gold medal as the best of all the breeding animals as being the fattest animal in the show, far excelling, in a butcher's estimation, any of those which had been avowedly prepared for slaughter.

We emphatically protest against a system of judging which awards prizes to "breeding animals, forced into such an unnatural state as this—forced until it becomes absolute cruelty for any one to insist on their being made to stand up even for a few minutes—until their ungraceful, waddling, hobbling gait, on being led out, produces painful feeling in the minds of spectators, instead of the unqualified admiration which might and ought to be elicited. And such decisions deceive no one—none, at least whose opinion is worth having. The ticketed and be-ribboned monsters may call forth the empty praise of those who poke at them with daintily gloved fingers or with the point of natty parasols, simply because poking of some sort or other is supposed to be essential in the examination of every prize animal; but the real Simon Pures look on with a very qualified degree of admiration; and whilst they certainly contemplate with interest the well-covered ribs and loins, the overhanging rumps, and the general state of obesity which, like charity, covers perhaps a multitude of faults, ask one another, with a very doubtful air, "Will they breed?" Ay, that's the rub; will they breed?

Now for a practical reply to this very practical question. Year after year and show after show, prizes are withheld from animals in the breeding classes, simply because those animals have not fulfilled the conditions. To speak in technical phraseology, they have not "qualified." They have proved barren—barren of produce, at least, though not of fame, to their owners.

They stood first at such and such Royal Shows—such is the record in aftertimes; but the fact that they were subsequently deprived of any permanent token of their honours, owing to their barrenness—their artificially created barrenness—is studiously kept out of sight. But, although the money prize has not found its way into the purse of their owner, nor is the medal producible, their temporary honour serves as an advertisement for other, perhaps inferior but more useful, animals of the same herd, and the value of the latter becomes heightened in consequence of their relationship to the winners. That is the secret. Forcing for show purposes is only a mode of advertising the excellence of the owner's wares; for short-horn breeding is quite as much a trade as shoemaking or tailoring; and though in some respects a costly mode of advertising, still it pays, and pays well too, in certain cases. Of this we have a clear example in the success and high standing of the Warlabby herd; for, without attempting for a moment to detract from the unquestionable merits of the Warlabby short-horns, we may be permitted to doubt whether Mr. Richard Booth would ever have enjoyed—and long may he enjoy—his comfortable income of £5,000 a year from the hiring of his bulls, were it not that he regularly sacrifices some of his best females to the absurd necessity which exists of overforcing for royal show exhibitions. And perhaps this very circumstance proves more than anything else the extraordinary excellencies of the Warlabby short-horns. Mr. Booth's females are crammed for show purposes, and sacrificed in consequence as breeders; and yet the standing of the herd is kept up by breeding from what may be called, comparatively speaking, the very weeds of the herd. Such being the case, the reflection naturally arises in one's mind. What would that herd become, and to what pitch of excellence would it arrive, were show judges invariably to act as they would do while purchasing for themselves, and, by their uniform rejection of all animals unfit for breeding in consequence of overforcing, encourage a feeling in favour of natural condition, and thus save the lives, and secure the usefulness, of those wonderful short-horns which are annually sent forth from Warlabby? If the éclat conferred by even nominal success at a Royal Show pays Mr. Booth, and atones for the loss of usefulness on the part of the prize females of his herd, we cannot, nevertheless, consider it in any other light than a national loss, when the flowers of such a herd are compelled to be sacrificed in order that they may attain a certain standard of excellence, which is never taken into consideration, and is even scrupulously avoided, at any other time than at a show, or believed to be desirable in any save show animals.

It is not because Mr. Booth is a sinner above all others in respect to overforcing his short horns that we thus allude to him. It is because

he is—to use the designation applied to him by his fair and enthusiastic disciple, Lady Pigot—"the hero of short-horns;" because when we speak of "Booth blood," we refer to the most successful line of short-horn blood in existence; for the majority of winners at all the shows in the kingdom have Booth blood in their veins; and for these and other reasons we hold it to be a national loss, as we have said, when such a man as Richard Booth must yield to a fatal and absurd passion, whenever he chooses to become an exhibitor, and by doing so deprive the country of the advantages which would follow to remain in a natural state, so as to transmit their peculiar excellences through a line of healthy and prolific descendants.

But although it may, perhaps suit Mr. Booth and a few other breeders to run great risks, it does not suit everyone to follow their example. And it is because many have tried to do so when they had not the right stuff nor the same advantages to fall back upon that we find in short-horn history so many instances of what we must call disappointed ambition, and of temporary success followed by sudden and utter extinction. All who are acquainted with such matters know that many individuals have attempted to become eminent short-horn breeders and exhibitors, and failed in the attempt. They have gone to great expense, without much judgment as to the materials they were collecting for the foundation of their future herds; they have forced their show stock, and they have sometimes even got a prize or two; but the very expensive cost of their whistle has ultimately sickened and frightened them, and they have abandoned the pursuit in disgust. Now, if those people had chosen to rest contented with moderate expectations, to have gone quietly and reasonably to work, it is most likely their efforts would ultimately have proved serviceable to the community and profitable to themselves, instead of leaving them in such a position as to act merely as beacons, to warn others of the rock on which they made shipwreck.

For all these evils there is a remedy, and we feel convinced it is high time it should be applied. Let it be perfectly understood that judges at our royal shows are resolved to reject every animal which comes before them, no matter how superior that animal may be in other respects, provided it is shown in such a state from forcing as to render its qualification, as a breeding animal doubtful. Let this rule be firmly and uniformly acted upon, and there will be no more forcing, the finest and, therefore, no more sacrifices of cattle in the world. For breeders who are exhibitors do not follow the practice because they like it; they have no desire to do so, but they have no option. They must either force or stay at home. There is, no doubt, a regulation in the programme of our principal societies to the effect that judges are expected



to disqualify animals which do not appear to be in a fit state for breeding purposes; and in the cow classes it is expected that "a live calf" shall be produced within a certain period after the prize has been awarded. But both regulations are often a dead letter, and might as well be omitted altogether for all practical purposes. Judges look to condition, and favor it; and the "live calf" may only have had sufficient strength to draw a single faint and almost imperceptible breath ere its existence terminates—a finale attributable solely to its dam's unnatural and unhealthy "condition."

It is necessary that show regulations should contain a proviso of the nature we have mentioned, but it must be evident that everything depends on the judges as to the manner in which a regulation of this nature shall be carried into effect. We do not mean to say that judges do not act conscientiously under the circumstances when they give prizes to over-fed animals; but we do mean to say that in doing so they act very differently from what they would do were they making a selection for their own use and advantage; and all we ask is, that they would act for the public as they would be for themselves. Let them do as they would be done by. For what is the object of their appointment as show judges? It is to tell the public which are the best animals for breeding purposes out of a number brought under their notice; and it appears passing strange that they should select as patterns the very fattest, as they almost invariably do, or at least, with comparatively rare exceptions: whilst all the time they would never think for a moment of keeping their own regular breeding cattle—male or female—in anything like similar condition. It is in this very point that the absurdity of the present system of judging lies; it is founded on a most vicious and ruinous fashion, and we decidedly think that the judges, who are breeders, should set their faces against it for their own credit, whenever an opportunity offers, and thus confer an inestimable benefit on all concerned.

Nor need we be afraid that the interest felt in our shows would be lessened were natural condition encouraged, instead of being discouraged as it is at present. We entertain the opinion that our show catalogues would present a much greater array of entries, and that the effect of encouraging natural condition would be to bring out many first-rate animals, of the existence of which the public are scarcely aware, as these are at present kept at home, because their owners prefer that they shall be sure and regular breeders, rather than prize winners followed by infertility, or at least great uncertainty as to whether they shall afterwards perpetuate their kind or not.

It is not, however, in the short-horn sections alone that the evils of enforcing are evident. Hereford breeders are equally culpable, and, in fact, with the exception perhaps of West High-

lands, Ayrshires, and Alderneys, it is questionable if there are any of our British breeds which have not suffered more or less from that practice. We have all heard of short-horn cows and heifers being shown and winning at Christmas shows of fat stock, and then, instead of being handed over to the butcher, as one would anticipate from their appearance on occasions of this kind, taken home and shown next summer in the breeding class of a royal show, and we have considered such proceedings as savouring somewhat of the preposterous, but we have also known precisely the same thing done in the case of heifers of the Angus breed. And when we go into other classes of stock, into the sheep and swine sections of our shows, the same forcing system is found to prevail, and the decisions of judges in such cases are just as liable to be influenced by "condition" as in the short-horn and other cattle classes. It is, in short, a general as well as a crying evil; the great blot on an otherwise commendable "institution"—that of public competition; and it is satisfactory to know, therefore, that public feeling is decidedly in favour of its entire and immediate abolition; "a consummation," no doubt, "devoutly to be wished," but which depends wholly on the managers of our royal shows, and our royal show judges in all departments.—*Journal of Highland Society.*

#### Experiment to Test the Profitableness of Various Kinds of Sheep.

A very interesting experiment, to test the fattening qualities, as well as the profitableness, of various kinds of sheep, has just been brought to a conclusion at Millhill, Inchtute, by Mr. McLaren, factor to the Right Hon. Lord Kinnaird. The sheep selected to be operated upon were Col. Inge's breed of Leicesters, Lord Kinnaird's breed of the same sheep, Mr. Hardie's border Leicesters, and Lord Kinnaird's Greyfaced Cotswolds. Ten of each variety were chosen, and the experiment extended over twelve months. Unfortunately, the season was very unpropitious, the continued wet inducing foot-rot in many of the animals, which occasioned the death of some and threw others very far back—so far, indeed, that several of them were a good deal heavier two or three months before the experiment was completed than they were at its termination. Those dying had to be replaced by others not equal in points of weight or excellence, so that the test, so far as the whole ten in each lot are concerned, is not so absolutely perfect as could have been wished, though quite as correct as it was possible, under the adverse character of the weather, to make it. No doubt, it is almost of equal importance for farmers to know the hardiest kinds, or which will stand best an exceptionally moist season like that which we have just experienced.

ed. But that is a question which we do not at present propose to discuss. We pass over also all reference to the weight of the fleeces, and we do so the more readily as we understand that Mr. M'Laren, whose admirable practical essays have more than once secured the Highland Society's premiums, will supply an elaborate paper on the whole subject to the *Transactions* of that society. In the meantime, we doubt not the readers of the *Scottish Farmer* will be glad to learn the result so far as it relates to consumption of food and fattening alone. In order to show as nearly as possible the true fattening properties of the several varieties of sheep, we shall take only four out of each lot of ten, these four having kept almost, if not quite, free from the rot during the whole of the time that the experiment lasted.

Beginning with Colonel Inge's Leicesters, we find that four of these consumed on the average, in the course of the year, 2,122 square yards of grass, 932 lbs. of clover, 10,799 lbs. of turnips, 1,144 lbs. of mangels, 200 lbs. hay, 74 lbs. of chaff, 53 lbs. of Indian meal, 6 lbs. of Indian corn, 528 lbs. of cake, and 365 lbs. of oats. The four sheep at the beginning of the experiment weighed respectively, 88 lbs., 86 lbs., 86 lbs., and 86 lbs.; at the finish they weighed 160 lbs., 159 lbs., 161½ lbs., and 159 lbs., showing on an average, a gain in live weight of nearly 74 lbs. each, or a total gain of 295½ lbs., which, say at 6d. per lb., would yield at £7 7s. 9d.

Four of Lord Kinnaird's Leicesters consumed 2,084 square yards of grass, 780 lbs. of clover, 10,479 lbs. of turnips, 1,178 lbs. mangel, 214 lbs. of hay, 76 lbs. of hay chaff, 53 lbs. Indian meal, 6 lbs. Indian corn, 451 lbs. cake, and 365 lb. oats. The live weights of each at starting were as follows:—75 lbs., 84 lbs., 80 lbs., and 81 lbs. At the conclusion they were 164 lbs., 146½ lbs., 155½ lbs., and 164 lbs. There was an average gain in the weight of each of 77½ lbs., or, on the whole four, of 309 lbs., at 6d. per lb., as before, £7 14s. 6d.; showing a gain of 6s. 9d. over the other lot. But this positive gain does not represent all the advantage Lord Kinnaird's Leicesters possess over their more thoroughly English neighbours. They acquired this at a smaller consumpt of grass, clover, turnip, and cake. To ascertain, then, the real superiority of the one over the other, our readers must debit Colonel Inge's Leicesters with 38 square yards of grass, 152 lbs. of clover, 300 lbs. of turnips, and 77 lbs. of cake, which they consumed over and above Lord Kinnaird's variety; and the latter with 34 lbs. of mangels, 14 lbs. of hay, and 2 lbs. of hay chaff which they eat more than Colonel Inge's. We do not put a money value on these things, because the prices varies much in different districts, and because each reader can easily do that or himself in accordance with the prices in his own locality.

We now come to Mr. Hardie's Leicesters—the Scotch or border Leicester, as they are

called. Four of these consumed 2,235 square yards of grass, 1,010 lbs. of clover, 12,093 lbs. of turnips, 1,229 lbs. mangels, 250 lbs. hay, 70 lbs. hay chaff, 53 lbs. Indian meal, 6 lbs. Indian corn, 529 lbs. cake, and 365 lbs. oats. At the commencement, these sheep weighed respectively, 91 lbs., 90 lbs., 92 lbs., and 93 lbs.; and at the finish, 198 lbs., 181 lbs., 188 lbs., and 182 lbs., showing an average increase on each of 95½ lbs., or on the whole, an increase of 383 lbs., which, at 6 per lb., would return £9 11s. 6d. This is a gain over Lord Kinnaird's, so far as mere butcher's value is considered, of £1 17s.; but then the greatly increased consumption of Mr. Hardie's lot reduces, very materially, the apparent profit. They eat 151 square yards of grass more, 230 lbs. of clover, 1,614 lbs. of turnips, 51 lbs. of mangels, 36 lbs. of hay, and 6 lbs. of cake. In other words, as much more grass as would have kept a third of a sheep of Lord Kinnaird's breed, as much more clover as would have kept one sheep and a fifth, as many more turnips as would have kept three-fifths of a sheep, as much more mangels as would have fed the sixth of a sheep, as much more hay as would have fed two-thirds of a sheep, and as much more cake as would have fed five-sevenths of a sheep. Speaking approximately, this experiment shows that about five of Lord Kinnaird's sheep could be kept on the same quantity of food that is needed for four of Mr. Hardie's. The gain in meat of these five sheep would fully equal Mr. Hardie's four, while the fleece of the fifth sheep would make his Lordship's more profitable than the others.

The grayfaced Cotswold consumed 2,182 square yards of grass, 1,050 lbs. of clover, 12,533 lbs. of turnips, 1,442 lbs. mangels, 254 lbs. hay, 86 lbs. hay chaff, 53 lbs. Indian meal, 6 lbs. Indian corn, 529 lbs. cake, and 363 lbs. oats. Their live weight at the commencement was respectively, 100 lbs., 108 lbs., 96 lbs., and 89 lbs. At the final end of the trial they weighed 188½ lbs., 181½ lbs., 183½ lbs., and 190 lbs. There was thus an average gain on each of 87½ lbs., or 350½ lbs., on the whole, equal in money value, calculated at the same rate per lb. as in the former cases, to £8 15s. 3d.—16s. 3d. less than Mr. Hardie's Leicesters, which consumed 40 lbs. less clover, 440 lbs. less turnips, 213 lbs. less mangels, 4 lbs. less hay, and 16 lbs. less hay chaff, but 53 square yards more grass. The trial, therefore, would seem to show that Lord Kinnaird's Leicesters are the most profitable keep, omitting the wool. A thorough test, in addition to the particulars above given, would include the price of fleece, the age, and the values of the sheep at starting. Taking the latter in a rough way; at 6d. per lb., we find that the original value of Colonel Inge's four was £8 13s., and the produce in twelve months, £7 7s. 9d.; of Lord Kinnaird's Leicesters, £8 0s. 6d., to yield £7 14s. 6d.; of Mr. Hardie's Leicesters, £9 3s., to produce £9 11s. 6d.; and of the gray-



faced Cotswolds, £9 16s. 6d., to return £8 15s. 3d. In proportion to their value, Mr. Hardie's and Lord Kinnaird's Leicesters again show best. Of course this reckoning is not free from empiricism; but we think it is sufficiently indicative of the value of each class of animal to be of some little use to those interested in sheep feeding.—*Scottish Farmer.*

### Farm Capital.

Money is needed by the farmer in the prosecution of his business—(1) for payment of rent and taxes for the land he hires; (2) for the purchase and maintenance of implements, of draught animals, and of steam power for the cultivation of the land, and for the conversion of its produce; (3) for the purchase of seed and manure; (4) for payment of labour during the year; (5) for the purchase of live stock by which to consume the green produce of the farm, and by which to provide the home supply of manure on which its fertility must depend.

It is plain that the amount which is made up of these items will vary exceedingly with the circumstances of the farm—(1.) Rent may not be asked for out of capital at all; the landlord may give twelve months' credit and ask for it directly (as he necessarily always does essentially) out of the produce of the land, not out of the capital which the tenant brings on it. Rent, moreover, whether long credit be given for it or not, varies between wide limits according to the quality of the land. It may be 15s. or 20s. an acre or it may be 40s., 50s., and it may vary even from 5s. to £5 per acre, according to the fertility of the land and its neighbourhood to good markets.

(2.) The amount needed for the purchase of farm implements and draught animals necessarily varies with the quality of work needing to be done. Stiff clay arable land cultivated highly needs more costly equipment in this way than lighter, poorer soils, more easily cultivated and laid down probably two years out of every five in grass; and both need larger outlay on implements and power than pasture land. The implements of arable land will cost from 15s. to 25s. an acre, and the horse power perhaps 15s. to 30s. an acre. This supposes steam-power to be *hired* for thrashing purposes. If it be provided for steam cultivation, a twelve-horse engine and apparatus, displacing twelve or fourteen horses and their implements and somewhat more, must be added to the capital thus required.

(3.) The amount needed for seed and manure is also extremely variable. From 10s. to 20s. for clover, and grain crops, and from 2s. 6d. to 10. for root crops; probably from 10s. to 15s. on the whole arable farm will be needed for the former; while for the latter the sum required varies from nothing up to as far as another rent, according to the spirit of the farmer and the proved experience of the locality. There are

many farmers who pay £1 per acre annually for artificial manure.

(4.) Labour varies from 4s. or 5s. an acre on grass up to 50s. per acre on our arable land. In the "Hand-book of Farm Labour," the particulars of farms amounting to 7,824 acres of acres of arable land, and 1,690 acres of pasture, are given; the wages paid on these farms were £14,423 per annum, or, deducting £423 for the pasture, 33s. an acre for the arable land.

(5.) The capital needed for the purchase of live stock and for extra food for them is the last item on the list, and this obviously will differ with the fertility of the land, the activity of its cultivator, and the rotation of crops adopted; and even in the case of pasture lands, where the natural fertility of the soil is the leading point, it varies from £2 or £3 an acre to £12 or £14—the grass in the former cases fit for little more than a sheep or two per acre, and the latter feeding annually a heavy bullock. On ploughed land the influence of various rotations comes into play, and the quantity of meat made annually per acre has been shown to vary from 30 lbs. or less up to 1 cwt. or more. In the former case it is plain that the stock will not need to be more than a sheep to every acre or to every  $1\frac{1}{2}$  acre; in the latter, it may be as much as three sheep or more per acre. But these calculations do not proceed upon the more economical processes now adopted, in which roots are pulped or steamed, and straw is cut into chaff, and much purchased food is used, so that the estimate of the capital under this head may vary from £1 or less per acre up to £5 or more, or when heavy crops of roots or straw are grown and double crops of vetches and rape, &c., are taken and consumed upon the ground.

Adding these items together, it will be found that the capital required on arable land varies from £7 to £15 per acre. Of these sums a varying portion will be payable on entering the farm on valuation to the out-going tenant, who will have spent for his successor certain amounts under most of these headings.

He may have paid for labour and for seed and for manure upon certain portions of the farm, and he may hand over by valuation certain portions of the implements and live stock which he has used upon the farm. Of the remainder a varying portion under most of these heads will not need to be paid until after harvest, when means may be provided for the purchase of live stock, and for the payment of rent by the sale of grain. In this way the burden of these demands upon the purse of the farmer is considerably reduced.

Nothing has been said of works for the permanent improvement of the land, which are properly a landlord's portion, but which, if the tenant be secured for long enough in his occupation may be profitably undertaken by the latter. Almost unlimited scope for the profitable application of capital to land is thus provided over a

great extent of the island; and the influence of the lease in leading thus to the higher cultivation of the land has been already referred to.

As a last word upon the capital of the farm, it may be well to remind the farmer of his interest in insuring his capital, however it may be invested, against the risks of fire, disease, and death, which will be accepted for him by the various insurance companies on payment of an annual premium.—*From 21st Edition of Arthur Young's Farm Calendar.*

## The Agriculture of Sweden.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

SIR,—Having just concluded a two-months' fishing tour in the central provinces of Sweden, I extract from some memoranda, chiefly relating to matters piscatorial, a few notes on the farming of the country, which perhaps may not be entirely without interest to some of your readers.

The district I refer to, and which extends from Gothenburg and Uddevalla on the west coast to Northkopping and Stockholm on the east, consists of extensive tracts of table-land, rugged hills, chiefly of granite, but occasionally alternating with primitive limestone, vast pine forests, and lakes resembling in magnitude inland seas. There is soil here of every variety, from the stiff clays yielding heavy crops of wheat, beans, peas, clover, and timothy, to the sandy and peaty soils appropriated to the growth of rye, oats, barley, and potatoes.

The farms in Sweden, strictly so called, are not numerous, more than three-fourths of the kingdom being in the hands of peasant proprietors or freeholders, a kind of petty yeomanry holding from 5 to 100 acres of arable land, the average being about 30. This independent class of men generally becomes wealthy by the same process which enriches so many of our pastoral farmers in the dales of Yorkshire and Westmoreland—the keeping down of all outgoings on land, or living and laying by of all the incomings however small. Some, however, whilst retaining their peasant rank, live in comfortable style, keeping good steeds in the stable, and good wines in the cellar, and perhaps represent their class in the Royal Assembly, of which the House of Peasants is the largest if not the most influential branch.

In addition to his arable ground, the peasant has invariably a tract of rough pasture land, generally moor, mountain or forest glade, where he pastures his cattle in summer, cutting the best part of it for hay. The holder of 20 acres of arable will thus keep six or eight cows in addition to a pair of working bullocks and a horse, their sole subsistence in winter being straw and wretched hay; for the peasant rarely grows roots or clover, but cultivates his land, as his fathers have done before him, on the two-course

shift, half-fallow, half-grain alternately, about one-seventh of the fallow being dunged yearly; the great object apparently being to grow as much grain as possible with the least expenditure of labour and manure. Vast tracts of rich loamy clay on the east coast of Lake Wetteren have been so cultivated from time immemorial, and still yield weighty crops of grain.

The Swedish farmer is of an entirely distinct class from the peasant, and, in virtue of his usually superior education and creditable character and habits, occupies an important social position. He is generally the Thane of his district, a man of urbane address and liberal ideas, and does the honours of his house and table, which are seldom wanting in the elegancies and comforts of life, with graceful and genial hospitality. He is often obliged to be as much *merchant* as agriculturist; for a Swedish farm, in addition to its generally large extent of arable land, frequently includes a flour mill, a saw mill, and a roofing and draining-tile manufactory, and perhaps a Brunvin distillery, where the potato crop is converted into spirits.

The peculiar features of a Swedish farm may, perhaps, be best understood by a description of one in the occupation of a very enterprising agriculturist at whose house I had the honour of being most hospitably entertained. The farm of Graffnaas, near Allingsås, comprises 9,000 acres, of which 1,000 are arable, 500 pasture, and 7,500 forest. The rent is £800 a-year. The soil varies from stiff clay to light loam, but is chiefly loam on a clay bottom. The fields are large—from 40 to 80 acres; 400 acres are in oats, the land being at a high elevation; 40 in wheat, 80 in rye, a few acres in oats and vetches for horses, and 20 in turnips and potatoes. The land reserved for pasture is not sufficiently good for arable, being for the most part marshy, or cumbered with rocks or brush-wood. All the best of this pasture is mown yearly, without any return of manure, which is never applied to meadow land in Sweden.

The forest portion of the farm is chiefly valuable as affording small holdings for *torpare*, an inferior grade of peasants, who render to the occupier of the farm, in lieu of rent, labour in proportion to the value of their respective tenures. Thus the holder of from 20 to 30 acres works for the farmer, personally or by substitute, every day during June, July, August and September, and two days a week the rest of the year, *extra* labour being paid for at half the usual rates, namely, half a rix-dollar, or 7d a day for a man; one third of a rix-dollar for a woman, and one-fourth, or 3½d for a boy; this scale being reduced in winter. In summer the men work from five in the morning till eight at night, after which they have often some miles to walk home. It is not unusual to see farms advertised to be let or sold, as having the right of five, ten, or twelve thousand day's labour in the year attached to them. In the farm of Graff-



naas 2,000 acres of forest land are held by torpare or bonders; 300 in small out-lying patches of arable, the rest consisting of open glades, scrub, or marsh. The torpare on this farm, including all ages and sexes, amount to about nine hundred souls, of which about two hundred and fifty are available for work, and the average amount of labour done by them on the farm is that of forty men daily the year round. The horses of the torpare (in this case about forty) are also at the disposal of the farmer; but this right is sparingly exercised, except for the carting of timber for farm or household purposes, or of grain to market, or during harvest-time, when they are frequently all summoned to the field. The peasant has this protection against an oppressive exercise of authority, that he is at liberty to quit his holding after fifteen months' notice, which he must also receive before he can be discharged from it.

The management of the Graffnaas Farm would reflect credit on any Norfolk or East Lothian farmer. The fields, roads, ditches, &c., are beautifully kept; the under-drainage which now extends over one-half of the farm, has been scientifically conducted, the drains, 4 feet deep and 22 feet apart, being uniformly in the direction of the fall. On this point the Swedes appear to be generally in advance of many of our Yorkshire farmers, who still adhere to the diagonal direction, without considering that on this system only one side of the drain will act. Another point on which I believe most English farmers might take a lesson from them is that they invariably begin to lay the pipes at the upper instead of the lower end of the drain, thus avoiding what otherwise so often happens, especially in wet weather, and when the fall is slight, the sludging up of the pipes as the work proceeds. The pipes used at Graffnaas are 1½-inch, the main drain consisting of six, laid pyramidally.

The rotation on this farm is—first year, fallow dunged; second, rye or wheat; third, clover and timothy, one crop; fourth and fifth, ditto pastured; sixth, wheat, half-dunged; seventh, oats; eighth, peas, tares, potatoes or turnips, with bone-dust, or oats again without manure. 18 pairs of work horses are kept, and there are 160 head of dairy cows, and forty heifers and calves, which (contrary to the usual custom in Sweden of keeping the cows in the house till the hay crop is off) are pastured from the beginning of May till the end of September. Two-thirds of these cattle are of the native breed (worth about £6 a head), the rest either pure Ayrshire or crossed with Ayrshire, 20 cows and a bull of that breed having been entrusted by the Swedish Government to the farmer, with a view to the improvement of the breed of the district. The only return required by the Government for this gift is that of two bull calves yearly, which are sold on behalf of the State, or consigned gratuitously to other farmers. The consignee of these 0 cows is further restricted from selling their

male offspring till they are two years and a half old, prior to which period they are not supposed to have attained the requisite vigour or development. The improvement effected by this cross on the native breed—which are too frequently such as the patriarch Noah would, probably, have hesitated to admit in to the ark—is very marked; and my opinion was frequently and earnestly asked, as to whether any superior advantages would accrue from the use of a Short-horn bull in the place of an Ayrshire; a question which it is difficult to decide, considering the inferiority of the pasture and the severity of the winters generally combined to render necessary the house feeding of the cattle 7½ months in the year, and that the staple food of the people is not beef and mutton (of which they produce and import but little), but rather bread, milk, cheese, and butter, the imports of which actually exceed in value (in this extensive and thinly populated country) £400,000 yearly. The question was more than once asked me, “Why do not Englishmen, possessed of a little capital, come here instead of going out to Canada or Australia?” and it is perhaps worthy of consideration, whether a country so near our own shores, and in many respects so favored might not afford scope for the energies and enterprise of British Agriculturists who feel the want of elbow room at home. My own impression, however, is, that were a man of moderate capital to emigrate there, with the idea of teaching the Swedes, and to introduce costly implements or expensive cattle, or any material innovations upon the established system of farming, without due regard to the exigencies of the climate and country, he would soon find himself at the end of his tether. For example, high-bred cattle would scarcely be remunerative in a country where beef and mutton, generally indifferent enough in quality, but excellent under the Swedish mode of cooking, may be bought for 3d. and 4d. per lb., and capital veal for 5d. Reaping machines would hardly effect a saving, where stout men can be had for the work at the rate of a penny per hour; or threshing machines, where threshers are contented to take every fifteenth or sixteenth sack in lieu of money wages. Two steam-ploughs have been introduced into Sweden by a wealthy landowner—one into the South, the other to a farm 20 miles from Wettersborg; but it is credibly reported that the labour of men and horses employed in the transport alone of English coal, by necessarily light loads over the hilly country, would suffice to plough the whole farm.

It is more than doubtful, therefore, whether any English settler, imbued with English notions of scientific cultivation, would meet with much success in a country where the conditions of climate and labour are so different from his own; but were he first to acquire by a year or two's tutelage under some intelligent farmer, a knowledge of the language of the country, and of the system of agriculture, which the observation

and experience of practical men have established there, and after maturely considering the nature and requirements of the soil and climate, cautiously and gradually to improve upon, rather than alter existing practices, judiciously applying the cheap labour at his command, and making the most of the internal resources of the farm, so as to avoid all unnecessary outlay on experimental farming, implements and manures, he would then, probably, receive better interest on his outlay than appears to satisfy so many of our agricultural farmers at home, in these days of high rents and heavy taxes. Were he further to possess the requisite mechanical skill and mercantile knowledge, he might probably turn the mills and factories, so frequently appertaining to Swedish farms, to very profitable account. Thus, on one farm north of Uddevalla, were two flour mills, with eight pairs of stones, working night and day, the year round, and yielding a clear annual profit of above £400 a-year. The manure left by the horses bringing grist to the mill, and waiting there, exceeds 1000 cart-loads yearly. There was here also a tape manufactory employing 40 hands; a small iron-foundry where castings were made, and nails, ship-anchors, hawsers, and wheel tires forged—the ponderous hammers, the furnace blast (of three cylinders), and whole machinery being worked by the never-failing water-power of a magnificent trout and salmon stream. The farm here had evidently suffered from the attention of the tenant being divided between it and the more important occupation of his mills. It was neglected and unproductive, though I observed upon it a source of fertility invaluable in a granite district—extensive beds of calcareous matter in the form of marine shells, in an apparently calcined state, sometimes imbedded in blue clay, and retaining their perfect shape; and sometimes, where almost unmixed with earths and crumbled by exposure to the air, closely resembling bone-dust.

In one respect, and under not unusual circumstances, a Swedish farm would seem to hold out to a man of small capital, advantages which are not offered in this country. I mean that of taking the farm with the live stock, horses, and implements upon it, thus enabling the tenant to retain his farming capital to meet rent and expenses till his grain crops become available for that purpose. Thus, a Swedish friend of mine lately had the offer of a farm at Linköping, the capital of the rich province of that name, lying on the east of Lake Wättern, consisting of 520 Scotch acres in 10 fields of 50 acres each, 20 acres being in meadow. The soil is principally loam and marl on clay sub-soil, about 50 only being hard to work, and that not so stiff as much of the land in the Carse of Gowrie. The stock, which is let with the farm, consists of 60 cows, 19 pairs of working oxen, 5 pairs of horses, some young colts, 50 sheep, and excellent and extensive buildings and dwelling house, the latter with 13 rooms. The rent asked was £525

English, and if from this be deducted £50 a-year as the produce of a saw mill and flour mill, and £50 on the score of cattle and implements (which may be estimated as worth £1,000), it leaves the rent about 16s. a long acre. £60 a-year covers all government, parochial, and other outgoings, and there are six torpare or free-labourers.

The yield of grain in Sweden varies, according to the season, soil, and husbandry, from four to six quarters of wheat to the long acre, and from four to eight of barley. The price of wheat is from 45s. to 60s. the qr., according to quality and the markets; barley, 25s. to 30s.; rye, 32s. to 35s.; oats, 16s. to 20s. This year the yield and quality of the grain, owing perhaps to the moist spring and cloudless summer and autumn, is without precedent. The farmers know not where to bestow their increase, and it is calculated that at least three millions of barrels will be available for exportation.

In speaking, however, of this year's yield of grain in Sweden as unprecedented, it must be remembered that a greatly extended area of land was brought under cultivation in the time of the Russian war, when rye rose from 13s. to 30s. per barrel, and land temporarily at least, about 50 per cent., and that, under the impetus then given to agriculture, deep drainage and tillage, with careful cultivation, have yearly made rapid progress, and resulted in increasing produce; the very peasantry beginning to feel that agriculture is a progressive art, and exhibiting, in many instances, a spirit of active improvement. The marvellous increase of produce in Sweden, wherever thorough-drainage has been effected, leads irresistibly to the conclusion, that the vast tracts of stiff retentive soils yet undrained, or drained only by open trenches and water furrows (the inefficiency of which appears in stunted crops and coarse herbage), would afford profitable employment for English capital. Sweden is peculiarly a poor country, and there are everywhere (but especially now, under the depression caused by the American war,) estates on sale. Not more than one-third or one-fourth of the purchase money is usually required to be paid down, the payment of the rest being extended over a series of years. It is impossible, of course, to give any very accurate idea of the value of estates in that country; but, at a loose computation, it may be said that five hundred acres of average land may be purchased for £10,000, the addition of two or three thousand acres of pine forest not materially enhancing the price, unless where the vicinity of a navigable river gives a marketable value to the timber. Such purchases should, of course, be judiciously made; if possible, near some line, or projected line, of railway, canal or navigable river, or seaport—the land sufficiently concentrated, and as level as consistent with easy drain-age, and the buildings—as is almost always the case in Sweden—con-



veniently placed, extensive, and well-arranged. Such farms, I think, let to intelligent tenants—the landlord providing for them draining pipes, and subsequently lime, and exacting under occasional supervision, a proper system of drainage and cultivation, but at the same time an easy rent at the outset, augmentable to a certain extent in a specified ratio yearly, as the condition of the farm and its tenant improved—could hardly fail to return a much higher rate of interest than is compatible with anything like good security in England; to say nothing of the prospect of more or less increase to the saleable value of the land, as the resources and riches of the country are opened up and increased by the construction of railways. Thus, land in the neighbourhood of Gottenburg has increased cent. per cent. in the last ten years; and in the event of the expected union of Denmark with Sweden and Norway, when Gottenburg from its central position and advantageous sea-board, would probably become the seat of government and the converging point of numerous railways, must continue to advance in value.

The climate of central Sweden is delightful, the atmosphere being, in the opinion of old Australians, more clear, buoyant, and invigorating than that of their own settlement; and the scenery, without attaining to the wild grandeur of Switzerland or even our own Lake districts, is generally picturesque. The winters, though severer, are drier than ours; the weather in summer steadier and warmer; wet hay-times and harvests are of rare occurrence: and vegetation is so rapid that corn is sometimes sown and reaped in six or seven weeks. Nowhere on the face of the earth will an Englishman meet with more hospitable welcome and hearty kindness than in Sweden and Norway. I say an Englishman; for between the people of Britain and of Scandinavia there seems to be a mutual sympathy and bond of alliance, arising probably from the affinity, and, in great measure, common origin, of race, manners, customs, and institutions. In Scandinavia, alone, perhaps of all the nations of Europe, is England regarded with feelings where envy and dislike have no place; and to that quarter alone must her statesmen look, should ever be deemed desirable to for a powerful and enduring Northern League.

I have spoken of the steadiness and warmth of the climate in Sweden; yet with these advantages they adopt measures for the speedy drying of the crops, which might be copied with benefit in the rainy districts of these islands, especially where access can be had to the thinning of fir plantations. The most simple mode of drying grain is by rearing a number of light poles, about 9 feet high, in holes made for their reception by an iron crowbar. A pair of sheaves are placed upright against the pole to support the other sheaves, which are then linked two and two together and threaded upon the pole at the junction of the bands, so as to rest in a hori-

zontal position one on each side of the poll. The rest are similarly placed till the top is reached, where one sheaf is then impaled through its centre. In the districts bordering on the Baltic extensive frame-works are used. A number of fir poles, about 20 feet high and 4 yards apart, are erected in a row, usually running north and south. At each side of these poles, namely, east and west of them, and 2 feet apart from them, is erected a lighter pole, 1 foot shorter. Across each of these three poles are then nailed or pegged nine cross-bars, 2 feet apart, and two sloping pieces are placed at the top to support a roof, falling two or three feet each way. From each of these nine cross-bars to the opposite cross-bar are then laid four loose poles, generally of split fur, thus making between each pair of uprights a series of nine shelves, 4 yards long and  $4\frac{1}{2}$  feet wide, on which the fresh cut vetches, clover, or timothy, or in wet seasons, grain, are placed and closely packed, and there remain till dry, proof against any damage from rains. It is of course necessary to prop against every other upright a sloping poll as a buttress: and this on both sides, unless when two parallel ranges are constructed a few yards apart, in which case it is sufficient to spur them on the outside, steadying them on the inside by a few poles stretched from roof to roof, and fixed at the ends as tie-rods.

A simpler and less expensive plan is in use in the western districts. Several couples of fir poles, about 8 yards long, are raised, at intervals of three or four yards, against each other, after the manner of a steep house-roof; the upper ends, which are pegged, cross or overlap each other sufficiently to afford a rest for the horizontal ridge-pole, which combines the couples. On the outside of these couples are inserted, at right angles to the slope of the pole, and 2 feet apart, wooden pins, about 8 inches long, to afford support for a series of loose horizontal bars, which are then laid from one to the other, thus completing the frame or rack. The laying on of the crop (which, whether of grass, clover, or grain, and however laid and twisted, is all cut with a short light scythe, which the mower wields in an upright position, cutting close to his feet) is then commenced by hanging the swathe over the lowest bar (which is two feet from the ground), till it reaches the next bar. The workman then stands upon the first layer whilst he fills the space between the next two bars, and so on till the ridge is reached, where a little straw or thatch is usually laid to turn the water. When grain is dried in this way the heads are put through the bars, the butt-ends being outside and inclining downwards; the whole resembling a thatched roof.

I fear that I have already trespassed too far upon your space, and remain, sir, your obedient servant,

WM. CARR.

Stackhouse, 18th Sept. 1862.

### Town Sewage.

A good deal of light is thrown on the subject of town sewage, so far as the possibility of turning it to agricultural account is concerned, by the ordinary experience of the farmer.

1. It is the experience of the farmer that manure is just food *minus* growth, and that it is rich or poor according to nutritiveness of the food and the meagreness of the growth. He knows that the manure from store-fed growing stock is less fertilising and powerful than that from well-fed fattening-beasts. Now, man is one of the best fed of the "domestic animals," and inference seems unavoidable.

2. Although it is certainly true that we have nothing in ordinary agriculture corresponding to the immense quantities of fertilising matter which are thus poured over the sewage meadows of Edinburgh and Carlisle—nothing corresponding to the 300 animals in one case, 200 animals in the other, averaging probably 20 or 25 lbs. a quarter, whose waste is in these two instances applied per acre; yet it is undoubtedly the experience of the farmer that an increasing intensity of manuring *is* the rule, and is found profitable. Of that our columns have for several past weeks given ample evidence.

Mr. Hudson, of Castleacre, on his 800 acres of arable land, must use 40 tons of guano, 4 tons of nitrate of soda, and 25 tons of superphosphate and lime per annum, costing close on 20s. an acre over the whole of his farm. And besides this he consumes immense quantities of purchased cattle food, which goes to enrich the farm-yard dung. Mr. Howard, of Biddenham, Bedford, consumes £1,000 worth of cake and other cattle foods per annum, and thus enriches the manure of the stock on a farm of 300 acres of arable land and 120 acres of pasture. Mr. Paget, M.P., of Ruddington Grange, Nottingham, consumes 30 tons of cake and 200 quarters of corn, costing probably upwards of £500 or even £600, on 150 acres of arable land and 180 acres of pasture. Mr. Melvin, of Bonnington, Ratho, on a farm of 600 to 700 acres, spends £1,000 on artificial and purchased manures. Mr. Campbell, of Buscott Park, Lechlade, has found it profitable, after drainage, to apply  $1\frac{1}{2}$  cwt. of Peruvian guano, 3 cwt. of superphosphate of lime, 1 cwt. of nitrate of soda, 15 bushels of bone-dust, and 1 cwt. of common salt per acre over his permanent pastures, and thereafter to feed sheep, five to eight of the large Lincoln sheep per acre, giving them cake in addition daily on the grass. This treatment has been adopted with great success over more than 1,000 acres of permanent grass. On an East Lothian farm of about 300 acres of arable land known to us, 18 tons of Peruvian guano, 12 tons of

bones and superphosphate, 6 tons of nitrate of soda, 3 tons of rape dust, and 3 tons of common salt are used, costing close on £400 per annum. On a farm of 280 acres of arable and 400 acres of pasture near Tavistock, Mr. Horswell applies 3 to 5 cwt. of Peruvian guano per acre to about 50 acres of swedes and mangels, consuming also with feeding cattle about 60 acres of barley and oats, about 25 tons of oil-cake, and 20 tons of bran per annum. The expenditure here must be £700 in cattle food, and £150 in artificial manures, on 280 acres of plough land.

These, then are ample illustrations of the fact that enormous quantities of fertilising matters are now commonly applied in English agriculture to the soil—that the soil is indeed being considered as a machine through which we put as much of the raw material of farm produce as by means of certain crops it will profitably convert, and that, therefore, there is nothing in ordinary agriculture to forbid the possibility of even the extraordinary supplies of fertilising matter which town sewers now for the most part send to waste being profitably used on a comparatively small extent of land.

3. It is the farmer's experience, moreover, that manure is more effective in the liquid than the solid form. If any one wants proof of that let him read Mr. Rustan's capital paper on the water drill in the 20th volume of the English Agricultural Society's Journal. Four to ten tons per acre of mangel wurzel, 30 to 40 per cent. of coleseed, a greatly increased produce of oats per acre, is obtained by the simple expedient of "flushing" in the manure that is applied at seed time with 3 or 4 hundred gallons of water to the acre. Another illustration of the advantage of putting manure in with water is seen in the superior efficiency which artificial manures exhibit in Scotland and the wetter climates of the island generally, as compared with their effect in the south-eastern drier countries. A third illustration of the same truth is found in the experience of the manure manufacturer and merchant, that a dry season is fatal to his trade. As a general rule, farmers do not buy these things until they are prepared to use them. And they know that it is useless to apply them in a dry state of the land and of the weather. The consequence is, we are informed, that nobody in the country uses the electric telegraph more than the agriculturist or his agent the local manure dealer, on any change of weather, as from a drought to rain, at this time of the year. The Thameside manufacturer is thus urged to the utmost, and superphosphates are sent off at the rate of hundreds of tons a day during the first wet week in April, May, or June, after a period of drought. It is undoubtedly also true that an



extremely wet season is also injurious to the manure trade, but that is owing, not to such weather being injurious to the action of the manure (the contrary is the case), but to its hindrance of the work of preparation of land for the crops to which such manures are applied during this and the following month.

4. It is, however, the farmer's experience as a general rule that liquid manure is "more plague than profit." That this arises, perhaps, as much from his keen sense of its being a plague as from any well ascertained experience of its not being profitable may be admitted; for undoubtedly the use of the water cart enforced by the tanks being full at times when it is inconvenient to take the horses from other work—enforced too, at times when it is often unadvisable to apply manure to all; and, indeed, the use of the water cart at all—a new machine and new process altogether, hitherto unknown to ordinary agricultural routine—is felt to be a plague. Nevertheless, the profitableness of the process, considering the extremely diluted nature of the manure, and the labour of its conveyance in this way, is often doubtful. The fact is, water should be the carrier of the manure, not merely the thing carried. And the prejudice (shall we call it) which leads the farmer to condemn the practice of carrying it to the land directly as manure, as a regular part of farm management all through the year, will yield when the labour of it disappears, and its fertilizing influences are obtained under the system by which a dilute liquid manure is its own carrier in large quantities to the land over which it is proposed to take it.

5. But then it is the farmer's experience that tillage operations are necessary during the growth of many of our crops; that a dry, or comparatively dry, condition of the land is necessary during the ripening of seed; that land cannot be tilled and seed cannot be ripened except the soil be comparatively dry. This, then, shuts out from the possibility of benefitting by these large liquid applications of manure a very large number of crops. Whether grain crops will benefit by such dressings during the grassy stage of their growth has yet to be satisfactorily proved. At any rate, land cultivated for grain crops cannot be that constant scene of sewage operations throughout the year which land must be to take the constant supply of sewage yielded by towns throughout the year. And, indeed, this truth almost entirely shuts us up to the use of the grasses as the only plants to be cultivated under the influence of liquid and sewage manures applied in large quantities. There are among the grasses particular species which are endowed with extraordinary powers of growth, and consequently of absorbing food. What we want is a plant which shall have in

its natural constitution, as exhibited in our climate, a power of growth corresponding to the quantity of food which in sewage manure is applied to the land.

A good deal of evidence has been taken before the committee of the House of Commons on this subject, as to the power of soils to store away the fertilising ingredients of manure for future use. And so far as regards its application during the winter season, when the weather checks the growth of grass, a conserving power of the kind is, no doubt, useful.

But during the summer, the time of growth, what we want is not a soil to lay up these fertilising matters as supplies against a time of use. The summer is the time of use. And what we want is a plant which shall be capable of using the material as it arrives. For this reason, too, the manure as it reaches the plant must be capable of giving out its fertilising matter for its use at once.

That of it which is capable of feeding the plant must be in a condition prompting it to leave the water holding it in solution on the very slightest invitation, and indeed to leave it without any invitation at all. For we believe that the maximum produce of grass is obtained when the air immediately above the flowing water is capable of feeding the leaves beneath which it flows, at the same time that the water is feeding the roots. In Italian ray-grass we have a plant exactly of the kind required, so also in many other grasses; for the Craiginny meadows, which yield such extraordinary produce of grass, contain little, if any, of the Italian ray-grass. It is in these grasses, then, and not in the soil, that we are to find the true machine for extracting the food which sewage yields. The mischief which it does and the nuisance which it is must be reduced to a minimum by turning it to use in this way in districts where the population is at a minimum.

The facts and arguments thus addressed to the reader must lead him, we think, to the conclusion that the sewage of great towns like London should be taken many miles away to where sandy slopes exist, over which it may be poured, and through which it will filtrate easily, and by means of which, or rather of the grasses which may thus be grown upon them, or rather of the cows which may be fed upon the grasses, the filthy stream may "by cleanly manipulation" be converted into milk.—*Gardeners' Chronicle*.

### The Value of Food.

Abundant, nay superfluous evidence has been furnished to prove that no one principle of food will alone suffice for nutrition; but clear and unequivocal evidence is still wanting to show how far each principle of food is essential to life

and health, provided all else save that one be sufficiently supplied. This is a very different question. Again, ever since Liebig's classification of food into plastic or nutritive and respiratory or calorific, some most important questions in connection with it have engaged the attention of physiologists. Amongst them are these:—Is any food destined to the production of heat without being concerned in the repair of tissues—that is, is any portion of the food directly burnt in the blood? Is any portion of albuminous food directly calorific, that is, burnt in the blood without forming tissue?—Experiments were performed upon rats and a hawk. The animals were fed upon different diets, and the experiments may be divided into three classes accordingly. In one class the diet was a non-nitrogenous one, consisting of equal parts by weight of arrowroot, sago, tapioca, lard and suet; for this mixture was found upon analysis to yield only 22 per cent. of nitrogen. In another class the diet was a nitrogenous one. It consisted of lean veal from which every visible particle of fat had been carefully removed. This yielded upon analysis only 1.55 per cent. of fat. In the third class the diet was a mixed one. It consisted of a combination of the two former diets. From these experiments the following conclusions are drawn:—Nitrogenous materials are not only calorific, but, at least under some circumstances, sufficiently so to maintain alone the requisite temperature. It is in the highest degree probable that, under certain circumstances, nitrogenous materials may prove directly calorific without forming tissue. Non-nitrogenous substances are at least under some circumstances, directly calorific without entering into the composition of tissue of any kind. While non-nitrogenous food only is taken, all the nitrogen which is excreted in the urine, and more, may be accounted for by the disintegration of the original tissues, without assuming that any fraction is assimilated from any other source. While life cannot be maintained without nitrogenous food, even though every other kind be abundantly supplied, death in this case being due to loss of tissue, life and even health and the normal temperature can be maintained, at least for a long period, upon a diet almost exclusively nitrogenous, with proper inorganic substances in which there exist only a small fraction of non-nitrogenous matter. Such a minute proportion of fat must be but a poor representative of non-nitrogenous food. Moreover in these experiments some of the rats sustained a loss of weight considerably above 50 per cent. When their temperature is maintained from external sources, or when they are freely supplied with calorific food, warm blooded animals may die rather from waste than loss of temperature, as perhaps is the case with cold blooded animals when they are starved. Lastly, in these experiments the significant fact appeared, that while the

weight, strength and general condition of the animals varied very widely under the different diets to which they are subjected, no considerable fluctuation was observed in their temperature. Even the slight variation from time to time recorded seemed rather to result from other causes than to depend directly on the food.—*W.S. Savory, in Proceedings of Royal Society.*

### South Australian Farming.

Among the several flourishing colonies of of Australasia, that of South Australia seems to take the precedence i. a purely Agricultural point of view. It not only sustains immense herds and flocks, but has been very successful in the cultivation of the cereals and root crops. Some of the finest wheat in the world has been produced in this, and the adjacent colony of Victoria. We are happy to hear of the prosperity of our fellow colonists in that distant part of the Empire, and our readers will be interested in the following article from the last numbers of the *Mark Lane Express*;

The last overland mail has brought us some interesting details from South Australia, which seem to mark the growing progress of this important and rising colony. The high position which it has recently taken by the awards conferred by the Jurors at the International Exhibition has led to a demand for information on the part of the public respecting its resources and present condition. The statistical details just taken in the colony furnish most *apropos* all that is required with regard to its land, crops and live stock.

From these official returns it appears that at the close of 1861 the total quantity of land alienated from the Crown, in South Australia, amounted to 2,379,048 acres, of which 1,393,672 acres were in the occupation of the proprietors themselves. As respects average price per acre, with the exception of 1861 which shows a little advance in price as well as in quantity sold, the sum realized has been gradually falling away for several years. Of late the acquirement of land has outstripped the increase of population, until at the end of 1861 the lands alienated from the Crown in this colony amounted to 18.2 acres for every man, woman, and child in the province. The lands alienated in Victoria amount to but five acres per head of the population; so that the people of South Australia own, in proportion to their numbers, nearly four times as much land as the people of Victoria. The average extent of holdings throughout the colony of Victoria in 1859 was 218 acres,



and the average number of acres cultivated by each holder is 26. We have, as yet no means of comparing these figures with those of South Australia.

We have before us a volume of Victorian statistics from 1835 to 1860. At the last mentioned date the "holdings" were subdivided into nine classes, viz, under five acres; 5 and under 15; 15 and under 30; 30 and under 50; 50 and under 100; 100 and under 200; 200 and under 300; 300 and under 500 acres; and 500 acres and upwards. Of the first class there were 786 holdings; of the second class, 1,674, of the third class, 1,241; of the fourth class, 1,206; of the fifth class, 2,199; of the sixth class, 2,087; of the seventh class, 1,140; of the eighth class, 283; and of the ninth class, 967. It will hence be seen that the largest number of farms in Victoria are those that range from 100 acres to 200 acres each, and the next largest those that range from 50 acres each, and the next largest those that range from 50 acres to 100. The holdings of 500 acres and upwards include all the purchased lands, and represent a wider aggregate acreage than all the other eight classes combined. The total number of all the "holdings" in Victoria was 11,573—(exclusive of town and village allotments): the total acreage of those holdings being 2,519,156; and the total of increase upon the foregoing figures. On the 31st March, 1851, there were, in Victoria, 2,076,014 acres of enclosed land not cultivated, against 1,388,160 acres in South Australia, enclosed but not cultivated on the 31st March, 1862. On the same dates the land under tillage in Victoria amounted to 419,380 acres, and as the people in South Australia exceed the people of Victoria as landowners in the proportion of four to one, they surpass them as cultivators of the soil in the proportion of more than five to one. The Victorians, with their recent Land Bill and their permanent provision for immigration, are, however, trying new and important experiments, and we may expect to find the present great relative disparity between the agrarian interests of the two colonies gradually decrease.

The land fenced in, but not cultivated in South Australia, amounted to 1,388,160 acres, and exceeded the enclosed pasturage of the previous year by 236,984 acres. The number of acres under cultivation in the season 1861-62 was 486,667, against 418,816 acres in the previous season, an augmentation of 57,851 acres, or 31.5 per cent. These figures give 3.71 acres to each individual of the population; at the end of 1856 the rate per head was only 2.38 acres. Tillage increases at a greater rate than the alienation of the Crown Lands, 20 per cent of the land sold being under cultivation, against 19 per cent. in 1861, and 13 per cent. in 1856. Of the total land cultivated 310,636 acres or 64 per cent. was under wheat. The yield a-

mounted to only 3,410,756 bush. against 3,576,593 bush. in the previous season. This shows a deficiency of 2 bush. 5lbs. per acre, or over 400,000 bushels, had the yield been equal to the average of the year previous, although 36,994 acres additional were sown with wheat. The average yield throughout the province was but 10 bush. 59lbs., against 13 bush. 14lbs. in the previous year. This decreased production arose from gales and heavy rains in December, which shook out much of the grain, and laid the straw.

Another cause of the low average of the aggregate yield is, that much land was sown with wheat which was not of the description best suited for the successful cultivation in ordinary seasons of that cereal, a state of things doubtless owing to numerous small freeholders and tenant farmers being compelled, whatever the situation or the nature of the soil, to cultivate the crop, raised with the labour, and capable of being gathered by machine. More than two-thirds of the crops are reaped by machine in the colony.

Proceeding from the subject of the culture of wheat, which is at present almost the sole reliance of South Australian farmers, forming as it does two thirds of the whole cultivation, the next important crop to be noticed is that of hay, forming 13 per cent. of the tillage. 62,874 acres, principally wheaten or oaten hay, were grown, against 55,818 acres in the previous season—an addition of one-tenth, the produce amounting to 78,886 tons and 71,241 tons in the respective years. The average yield of the hay crop was the same in both seasons, or twenty-five hundredweight to the acre.

About one-tenth more land was planted with potatoes than in the previous year, 2,612 acres producing 7,726 tons in 1861-2, against 2,348 acres yielding 7,112 tons, the average produce being 59 cwt., or a hundredweight and a-half less than in the previous year. The above supply was insufficient for the local consumption; 2,450 tons, or nearly one-third more, having been imported at a cost of £13,419 for an article that could have been produced in the colony of equal quality to that imported.

The live stock returns show an addition to the number of all kinds of stock except horned cattle. There is an increase of 3,198 horses, making a total of 52,597; of which 47,434 are returned in the counties, and 5,163 in the pastoral districts. The shipment of South Australian horses to India and other ports during the past three years has obtained some importance, about 509 being the average number exported in each year. The decrease in the number of horned cattle is 12,831, a large falling off appearing in the number depasturing in counties; of which, however, there is difficulty in arriving at a correct enumeration. The total number in the colony is stated to be 265,533 head. Sheep

and lambs number 3,038,356 against 2,824,811 in the previous year, showing an increase of 213,545, or but eight per cent. in the year. The increase occurs chiefly in the more distant counties and in the other pastoral districts. The number of pigs has increased by 9,539, there now being 69,286 in the colony; notwithstanding, the imports of bacon, hams, &c., amounted during the past year to over seven thousand pounds value. Poultry of all kinds number 327,709. During the past four years the export of eggs alone has brought to the colony no less a sum than twenty-one thousand pounds.

Vine culture has attained such considerable importance in South Australia as to demand particular attention to the statistical facts elicited as to its position at the present time. The quantity of land planted with vines has increased rapidly. At the close of 1850 there were 282 acres; in 1854 409; 1856, 753; 1857, 1,055; 1858, 1,626; 1859, 2,201; 1860, 3,180; 1861, 3,918 acres. The number of vines was—in 1860, in bearing, 1,874,751; not in bearing, 1,948,510; total, 3,823,261. In 1861—in bearing, 2,361,574; not in bearing, 2,386,141; total, 4,747,715. The quantity of wine manufactured was in 1859, 182,087, and in 1860, 312,021 gallons. In comparing the quantity of wine made with the number of vines in bearing, it will be seen that only one gallon of wine has been obtained for each six vines. When the whole of the vines now planted will be in full bearing it is reasonable to expect that after deducting for the fruit, both fresh and dried, each vine will furnish a quart of wine, or a total of 1,186,404 gallons, being equal to 11,864 pipes of 100 gallons. Since 1856 the area of the vineyards has increased more than five-fold; and as during the last three seasons the number of vines planted has nearly doubled, those in bearing can form but a moiety, being the proportion shown above. The wine returned as made, is that produced in the season 1860-1, amounting to 312,021 gallons, an increase of no less than 129,934 gallons, or 70 per cent. on the quantity made in the previous year, viz., 182,087 gallons, and more than three times the quantity produced four seasons ago.

The weight of grapes sold or otherwise disposed of by the grower than in the manufacture of wine, was 23,229 cwt., against 23,398 cwt. in 1860-1; but it is probable that a large proportion of the grapes so returned eventually reach the winemaker, the purchase of small proprietors' crops by neighbouring vine-growers possessed of better appliances for the manufacture of wine, being now carried on to some extent, to the manifest improvement in the quality of this article of colonial produce.

At Chicago, on October 30th, 7 grain-loaded vessels cleared for Buffalo, 3 for Port Colborne, and 8 for Oswego.

## Agriculture of Colorado Territory.

The rich alluvial bottom lands of the Arkansas river are covered with a luxuriant vegetation, and wherever ranches have been commenced and farming labour expended, the results have been of the most satisfactory and profitable character. We were agreeably surprised to find such extensive improvements along the valley of the Arkansas.

The great objection heretofore urged against general agriculture in this region, has been the want of timely rains. This deficiency is now supplied by an extensive system of irrigation, and farmers find it even better dependence than rain, because they are able to moisten the earth at just the proper time, and to just such an extent as necessity requires. We have never seen finer corn anywhere than that grown this season on the Arkansas and Fontaine qui Bouille, and wheat, oats and barley have grown luxuriantly. All the other vegetable products have flourished bountifully, and the crops have in some instances yielded immense returns to their fortunate proprietors. We saw quite a number of wheat-stacks, which, on examination, proved to be equal to the best white winter wheat. The berry was plump and large, and the straw unusually fine. The yield per acre in some instances reached as high as forty-five bushels.

Ranchmen with whom I conversed, expressed their complete satisfaction with the fertility of the lands upon which they were laboring, and their entire confidence in the surety of a good crop, no matter how dry the season. Garden vegetables, melons, &c., are particularly prolific in yielding, and enormously large. At Fontaine City, at the south of Fontaine qui Bouille, we stopped an hour at the hospitable ranch of Mr. Leonard Johnston, and were regaled with the largest and most delicious watermelons and muskmelons we have ever eaten. Some of the former weighed fifty pounds. Other specimens of garden growth were exhibited to us, which would vie in size, quality, and abundance of yield, with the best ever produced in that celebrated region—Southern California.

As a grazing region, the rich bottoms and ranges along the Arkansas and Fontaine qui Bouille will compare favourably with any other portion of our territory. Stock raising is attracting the attention generally of the settlers, and already formidable herds of cattle and a few flocks of sheep are fattening on the hills. Another year and the farmers of this region will be enabled to supply in almost unlimited quantities all the vegetables and cereals for consumption in the southern portion of this territory. Fences are being built, ditches constructed, good comfortable buildings erected, and everywhere there is an air of enterprise



and thrift which characterizes all new and promising farming sections. Drouth is something which inspires no dread in the minds of the farmers of the valleys through which we rode. The facilities for irrigation are most admirable. Ditches stretching for miles in length, and carrying immense volumes of water, skirt the hillsides along the bottom, from which the grateful element can be diffused over thousands of arable acres at will. Timber, if not of the most superior quality, is abundant for fuel, fencing and building.

We do not wish in our remarks on this section, to be understood as disparaging any other agricultural portion of Colorado. All along the valley of the Platte, the Cache la Poudre, Boulder, Thompson, Clear Creek, and a few other streams, extensive agricultural improvements have been made, and, we presume, with equally flattering results. But we have made special mention of our southern farming interests, because we have fortunately passed through that promising region at the time when the bountiful harvest was just gathered, and when we could see and appreciate the productions and adaptiveness of our bottom lands for agricultural purposes. We are fully convinced that after another year passes, no more flour, corn, bacon, or animal food of any kind, will be freighted across the Plains to this territory.—*Exchange.*

### Weedy Neighbours.

There are few evils afflicting agriculturists that can compare with the mischief occasioned in a well-farmed district by the presence of a neighbour who *does not cut down his weeds*. At the present season, in some parts of the country, the air is actually filled with floating thistle-down; and, keep land as you may, if one has a *dirty neighbour*, high farming, in its true sense, is labour in vain. We cannot even hold proprietors guiltless in this matter of disseminating weeds; for from their woods and commons and warrens millions of seeds are hourly winging their flight to the garden-like farms of their tenants. In our columns mention was lately made of the institution of a Chamber of Agriculture. Here, then, is a fertile subject for immediate consideration, and one about which the Chamber could with good grace go to the Legislature for protection. In the colonies, our sharper brethren have long ago dealt with the question in a business-like way; and particularly in the colony of Victoria, a very heavy penalty is enforced from any one who allows weeds to go to seed.

Perhaps it may be thought by some to be inconsistent with British ideas of liberty and private rights, to interfere in such a case; but we cannot perceive the slightest injustice in

putting down such a nuisance; and a nuisance, in every sense of the word, it is. It would be invidious to mention individual cases; but we presume there is scarcely one of our readers who possesses a clear-kept farm, who could not at once point to some promoters of this evil, so rife at this particular season, and who does not fully sympathize with his brother-farmer who lives alongside of a "weedy neighbour." Commons in general, or seaside links, are often the great hotbeds and nurseries of this pest of thistles; and we have heard it mentioned that one in East Lothian supplies thistles for nearly the whole country. In the absence of the proposed Chamber of Agriculture, perhaps the committees of some of our agricultural clubs will put down for discussion during the ensuing winter the subject of "Weedy Neighbours;" and we shall live in hopes of seeing a short bill passing the House of Commons, compelling every one to cut down his thistles before they go to seed, and wing their flight to the farms of those who are compelled most unwillingly to receive them.—*Scottish Farmer.*

### Use of Leaves.

In many sections of our country, oak leaves are extensively used as bedding for domestic animals. They are gathered in the forests in autumn, and stored in some convenient place till wanted. This affords them time to dry, which increases their power of absorption, and renders them more valuable in taking up and preserving the liquid voidings, and also facilitates, through this means, the decomposition of the vegetable fibre when used as a manure. That oak or other kinds of leaves, operate powerfully when spread broadcast on the surface of mowing land, is unquestionable; yet this results not so much from the "astringent" matter they contain, as from the non-conducting power. We spread leaves around the trunks of trees, the blossoming of which it is desirable to retard in spring, we apply them also in "mulching," the object of which is to retain the moisture in the soil for the benefit of trees newly transplanted.

When they are spread upon the surface of grass lands, they present, to a very great extent, the action of the solar rays, and thus in a measure deprive the roots of the energizing and vitalizing influences upon which their strength and vigour very essentially depend. Whatever may be the effects produced by leaves, in their crude state upon cultivated vegetation, we see that they are eminently useful in woodlands, where, if they are removed annually, the growth is not only greatly retarded, but arrested.

In compost, also, we may often see the value of leaves tangibly exemplified, for experience has long assured us that few more really valua-

ble accessions can be made to the compost heap or yard, than that obtained from the forest. In the cultivation of young fruit trees, this species of dressing is now greatly valued. From one to two years are required to prepare them for this purpose according to the particular use to which they are to be applied. Any kind of forest leaves will be found valuable for this purpose. All that is necessary is to afford them time to decompose. The foliage of the alder, bass, poplar, willow and other similar trees, is more readily decomposed than that of the elm or oak; but they possess less consistence, and consequently tend less to the increase of the compost heap.

The fact is now generally well understood by practical agriculturists, that the aliment of vegetables, technically denominated *Humus*, is best produced from that class of substances from which plants derive their food. The process adopted for elaborating this important material is attained in a variety of ways; but the most direct method is by the application of substances of an animal or vegetable character in a state of active putrescence or decay. We of course, are speaking now of organic manures, and in the list of materials shall embrace *leaves*. These, in addition to their organic constituents, possess also matters of an inorganic character no less essential to plants in a growing state, than the former. To illustrate this point somewhat more fully we present an analysis of leaves of the "Early Harvest Apple." The leaves were collected September 30, the tree bearing fruit:

|                               |              |
|-------------------------------|--------------|
| Silica .....                  | 5.775        |
| Earthy phosphates             |              |
| Phosphate of peroxide of lime | 4.875        |
| Phosphate of lime.....        | 1.416        |
| Phosphate of magnesia....     | trace.       |
| Silica.....                   | 5.125        |
| Phosphoric acid.....          | 5.359—76.775 |
| Lime .....                    | 36.398       |
| Magnesia.....                 | 0.075        |
| Potash .....                  | 13.179       |
| Soda .....                    | 11.616       |
| Chloride of sodium.....       | 0.060        |
| Salphuric acid.....           | 0.137        |
| Carbonic acid.....            | 15.200       |
| Organic matter.....           | 2.850        |
|                               | 101.065      |

PROPORTIONS.

|                     |        |
|---------------------|--------|
| Water.....          | 54.341 |
| Dry .....           | 45.659 |
| Ash .....           | 4.194  |
| Calculated dry..... | 9.163  |

—N. E. Farmer.

### Temperature of the Earth Under Sod and Under Cultivated Surface.

The writer was recently a listener to an animated discussion between two excellent gardeners. One insisted that the earth was drier and warmer

under sod than under loose earth. The other argued on the contrary. Each was sure the other was wrong, and each appealed to us. "There is a Thermometer, we replied, "why do you not go and try for yourselves?"

How strange it is that men will argue for years on the most simple questions, when but five minutes of actual experiment would often decide the matter at once and forever! How true it is that a large amount of misunderstanding, often leading to the most disastrous issues, not only to individuals, but to whole communities, arises from imagination being mistaken for fact, and hasty assumption misplacing cool perception. In our schools most of what we are taught might come under the head of "what to remember;" but how much better would it not be if the system was "how to observe and consider?" We cannot help making these reflections, as, in our department of education—horticulture,—we find this injudicious course of education opposing our progress at every step. But to the temperature experiment.

It was mid-day on the 26th of August, and the thermometer, in the shade, under a tree, six feet from the ground, was 92 degs.

The first spot selected was in a very hot place, on a lawn, where the grass was kept mowed pretty close by a scythe. A spit was dug up by a spade six inches deep, the thermometer inserted, and the sod placed on immediately. After a few minutes, the thermometer was found to mark 88 degs. Ten feet from this spot, in the same full sunny exposure, was a flower-bed, kept clean by the hoe and rake. The thermometer was here inserted as before, and found to be 96 degs.

A more exposed place was then chosen, on a hill, where a boundary once divided a pasture from a cultivated piece of ground, used as a nursery, on which three-year-old apple trees were growing. Four feet from the fence, in the sod, the thermometer was again tried as before, and the result was 80 degs. The same distance in the cultivated lot, tried in the same way, gave 88 degs.

It was evident from these two experiments, tried in the coolest and in the warmest spots that could be found, that the relative difference in the temperature was uniform, and the result is, that on a hot summer's day, the earth, six inches under surface in sod, was eight degrees cooler than under a clean, loose surface.

It seems to us that this fact, if found to be universally as it was in this particular instance, ought to have an important bearing on the discussion of many important horticultural questions—such as whether orchards as a rule, are better in grass or not, for instance—but it is not our object here to enter into such questions. We wish now merely to call attention to the want of more observations and less opinions, and to show the result of such an experiment in a single instance.—*Gardeners' Monthly*.



### On the Selection of Seeds of the Cereals.

In every field of grain there are to be seen ears differing in size, in form, and in general appearance from those growing beside them. Some of these can be recognised as the ears of established varieties, but a few will be distinct from any of the kinds in cultivation. Farmers usually bestow little attention on the different kinds of ears which may be sometimes seen growing in the same field, and which can be best observed during the cutting and harvesting of the crop; but if one farmer in a thousand would undertake the collection of such ears with the intention of sowing the seed, and thus propagating the kinds, the number of varieties would be considerably increased, and the kinds in cultivation would be improved by this selection of the best ears. Those who intend to collect ears of one or more of the cereals should proceed methodically, not only when selecting, but in keeping the ears of the apparently different kinds distinct at the time of gathering them, so that each kind can be sown by itself, and the produce from the seed of the selected ears collected and stored for future sowing. During the time of selecting ears, small bags formed of cloth should be carried, and as the ears are separated from the stalks they should be placed in one or other of the bags. Care should be exercised to prevent confusion and intermixing of the seeds.

Every circumstance should be noted at the time, such as the field of grain in which the ears were gathered; the characteristic features which the ears presented in growing, such as size, form, whether the ears are close or open, and the color of the chaff and straw, chaff smooth or downy, and other points deemed worthy of being recorded. A written description should be placed with the ears put into each bag for after reference, as it is seldom advisable to trust to the memory as to the facts. The bags containing the ears should be hung in an open place away from mice or other depredators until the period of sowing the seeds.

When it has been determined that the sowing of the seeds of the selected ears shall be proceeded with, a plot of ground near to the entrance of the field can be chosen, the remainder of the field to be seeded with grain of the same kind, whether wheat, barley, or oats. Small ruts can be formed by a hand hoe, the seed thinly sown, and the earth returned by a hand rake, the seed being lightly covered. Each plot seeded should be marked by a piece of wood inserted at the end of the rows and the number marked on the wood for after reference. A note book should be used for inserting all facts connected with the selecting of the ears, the sowing of the seed, the appearance the different plots presented at the period of braiding, tillering, earing, blooming and ripening, with dates and other particulars.

The amount of trouble which the propagating of varieties entails renders it advisable for experimenters not to attempt too much at one time. Only those who are resolved to bestow minute attention during the whole period from the time of selecting the ears until the quantity of grain produced admits of its being distributed, should undertake the selection of ears for propagating the variety. In propagating new varieties, constant attention is essential to keep the variety true to the kind selected, more particularly if it has originated in what is termed a sport, either the result of cultivation or hybridization—the pollen of the ear or one variety fertilizing the seeds contained in the ear of a different kind. This hybridization is sometimes effected by experimenters, but accidental contact is the more frequent cause of the sports which appear in cultivated plants. Every variety of grain in cultivation will occasionally show ears differing from those which possess the characteristic appearance of the variety, while some varieties show red or brown ears, and ears with and without awns. The higher the manurial condition of the soil, the tendency to sporting appears to increase in force. As the soil should be made rich in which the seeds of the selected ears are grown year after year, this tendency to sport is certain to appear, and as the propagating of the selected variety is proceeded with, constant care is essential to cull out the ears which differ from the original standard of the selected ears. If the variety is the result of hybridization, this culling is all important.

The ears will differ considerably in appearance, some resembling the kind from which the fertilizing pollen was derived, and others more closely resembling the variety which the pollen fertilized. Uniformity is essential to entitle any grain to the term variety, and this uniformity can only be secured by constant care in selection. After the type becomes fixed, sporting and degenerating will almost wholly cease, provided ordinary care is taken by the propagator. But every established variety should be kept up by occasional selection of the best ears.

In an industrial point of view the propagating of a new prolific variety of any of the grains is of immense national importance. Any new variety which would yield from one to four bushels of additional grain per acre over the ordinary varieties in cultivation would tend thus far to raise the resources of our own soils. In this direction an extensive and most inviting field is open to all cultivators. Were agriculturists to study more closely the operations of horticulturists, much benefit would result to all. Farmers generally not only undervalue, but wholly disregard what horticulturists have done for agriculture. As well said by the highly distinguished botanist Dr. Lindley, in a recent address to Prince Albert, as President of the London Horticultural Society, "Horticulture, sir

is the parent of agriculture. It determines, on a small scale, the value of the principles on which an extended cultivation of the soil depends."

In garden vegetables, in fruits, in flowers, in shrubs, immense progress has been made within the past few years, mainly the result of propagating new varieties. In all departments of horticulture the exercise of skill and untiring perseverance is apparent, and should be an incentive to agriculturists to follow in the same path.

The pleasure, and in exceptional cases the profit, to be derived is so considerable that the propagator of new varieties will generally be amply rewarded for the time occupied in conducting the various operations of selecting, sowing, and reaping new kinds of grain. Those farmers who are anxious to improve the varieties of grain in cultivation—wheat, oats, or barley, should adopt the same means as some so successfully followed out by horticulturists—hybridizing, and more especially by selecting the best ears, and growing the seed so obtained until sufficient quantities are secured to seed considerable portions of land preparatory to disposing of a portion of the seeds raised from the selected ears. The improvement of the domestic animals and birds has been mainly effected by selection, and the same principles are equally applicable for the improvements of the various varieties of the cereals in cultivation. This field of experiment is open to all, and the persevering may calculate upon success. Where so much can be effected with even an ordinary amount of attention, the experimenter who possesses a knowledge of the cereals, and also of vegetable physiology, is certain to reap a good harvest.—*North British Agriculturist.*

## Agricultural Intelligence.

### The Michigan State Fair.

The *Prairie Farmer* of October 4th observes:

The 14th annual fair of the Michigan State Agricultural Society was held at Detroit last week, and proved a complete success financially, and presented an array of articles and animals in the different departments that entitle it to a fair comparison with the most successful ever held by the society.

The opening day closed with a heavy thunderstorm, quite flooding the grounds and dampening the ardor of the members and exhibitors somewhat, but the second morning broke cool and clear with promise of fine weather which held good. Departments filled rapidly and the people turned out. \* \* \*

The attendance was very large Wednesday and Thursday. Parson Brownlow addressed an audience of about 15,000 on Thursday afternoon, with a recital of personal adventures before leaving Dixie land—he was cordially received.

**Horse Department.**—The entries were not numerous, but enough well-known stock entered to attract great attention. Among them "Magna Charta," "Fanny," a celebrated trotting mare, and many others of local celebrity. Several excellent spans of matched horses were on the ground for carriage and general work. Jacks and mules were more in number and better than ever, showing the attention paid to this branch. The government demand for both horses and mules will tend to remove very many ordinary horses and their place will doubtless be filled with a better grade of stock if we may judge by the feeling shown among horse men and farmers.

**Cattle Department.**—The number of animals entered was large, comprising Devons, Durhams and grades. There were a good many fat cattle, some very noticeable ones. One ox, especially, fed by Mr. Smith, Detroit, weighing over 3,200 lbs. The herd of Messrs. Crouse, of Hartland, in part of imported stock, was very fine, and contained animals of much promise. The Messrs. Sly of Plymouth, noted breeders, had a fine herd. Several others from Ohio and Canada, showed good herds.

**Sheep Department.**—Here, as at Cleveland, the Vermonters appeared in competition with local breeders and growers. The home exhibition was not what Michigan can or ought to have made. The show was made up of Leicesters, South Downs, French and Spanish Merinos. There is a large demand now for sheep, corresponding to the government demand for clothing and want of cotton, and prices have largely advanced the past season. Large prices are offered for fancy sheep. We would caution those desiring to commence to be very careful of whom they buy high priced sheep, that they do not suffer as many in the west have heretofore done.

**Implement Department.**—Anything that will lessen the labour of the farm, and in part make amends for the labor of those who have volunteered, gave this department especial prominence, and the usual number of new inventions, practical and impractical were shown, the proprietor of each demonstrating what fortunes can be made or saved by their adoption. Reapers and mowers were well represented. R. L. Howard, of Buffalo, N. Y., showed the Ketchum Reaper and Mower. The former has a very ingenious simple raking attachment, which the driver can operate with one hand, while he drives with the other, or it can be so arranged as to be worked by the machine—the cost of the attachment is about \$10 for a hand rake, and can be attached to any reaper. He also showed an attachment to the reaper for cutting



up corn. The grain platform and cutter bar is removed, and a shorter one put in its place with a V. shaped hopper for the corn to fall into as cut. When enough for a bundle is cut, it is dropped out upon the ground. It seems as though it would work well. With slight alteration it could be made to attach to most machines.

The Buffalo Agricultural Machine Works had on exhibition the Kirby Machines—the reaper of which had a self-raking attachment, and operated at the will of the driver to lay off bundles of any size, etc. The arrangement was very ingenious. Its cost, attached to the machine, would be from \$25 to \$30. They have been operated only the past season.

*Grain Drills.*—Thomas Mast & Co., of Springfield, Ohio, showed their Buckeye grain drill, with grass seed attachments. The popularity of this drill may be judged of when it is known that they make and sell more drills than any one firm in the States.

Baldwin, Dewitt & Co., of Cleveland, Ohio, also showed the Star Drill, a very excellent machine, and finely finished, its arrangement for seeding insures a very even distribution of seed, and prevents all clogging from foul or dirty seed. Each of last two firms also showed portable cider mills, of which they make large numbers.

*Stump Puller*—Daniel C. Smith, Adrian, the man who used to show a corn-husker at our fairs, has invented and showed here a powerful stump puller, capable of raising 1,000 tons weight with one team, it weighs 3,000 lbs., and is rigged upon a pair of wheels for moving from field to field or stump to stump. It is a combination of pulleys, lever and shears. Complete for use with ropes and chains it costs \$150.

*Farm Products.*—This department was almost totally neglected. A few vegetables, a dozen or so samples of wheat, three or four cheeses, very little butter, a few loaves of bread, are the principal contents; long ranges of tables were entirely empty.

*Fruit Hall* was better filled, but nothing compared to what Michigan is capable of doing. Native grapes were shown by several, together with some splendid lots of the Concord. The Delaware was also shown by some half dozen different ones. The show of Pears was very fair, as also that of apples. This department was under the charge of T. T. Lyon, Plymouth, Mich., a prominent Pomologist of that State.

*Floral Hall* was very finely arranged with a fountain and fish pool, filled with various fishes in the centre, and surrounded with a grass border, as were other departments where plants were bedded in the earth and kept their freshness throughout. Cut flowers were arranged on tables and shelves to good advantage. A part of this building was given up to sewing machines and pictures.

*Manufacturer's Hall.*—The show here was meagre, and embraced but little that was specially noticeable, except the specimens of Saginaw salt which is now attracting so much attention in the country.

The receipts of the Society enabled them to pay their debt, (about \$2,000) pay all premiums, and will leave a fair surplus. This, in war times, was unexpected by many.

### Kerry Cattle.

A correspondent of the *Prairie Farmer*, who has been visiting some of the fine places in the vicinity of Boston, gives some account of the Kerry cattle belonging to Mr. Austin, of Roxbury, purchased for him in Ireland by Sandford Howard, Esq. The original importation consisted of six heifers and a bull; and the herd now owned by Mr. Austin is believed to be the only one of this breed in our country. The exportation of these cattle to America caused quite an excitement in Kerry. The Kerrys are usually jet black, though an occasional one of some other color is seen. Their prominent characteristics seem to be; a hardy constitution, the economy with which they are kept, and good milking qualities of the cows. In size they are about equal with the Jerseys, in form compact and symmetrical, combining the fore quarters of the Devon, with the hind quarters of the Durham. They seem to be well adapted to the farms and cottages of their native country, and if they were common in this country and regarded less as *fancy stock*, they would be well suited to our hilly pastures and severe winters. The writer alluded to above, says:

"They are remarkably gentle, and their hair is uniformly very thick, showing their ability to withstand the severest of winters without shelter.

Mr. Austin has experimented with them upon different kinds of pastures, and expresses the belief that they are emphatically the "poor man's cattle," yet it is likely that they will be monopolized by the rich for some time to come. Whilst I will say they are exactly the breed of cattle for the mountainous pastures of New England, I will also say that if I lived out in the open prairie, had no barn, and could keep but one cow, I would prefer a little black Kerry Cow to all others."

### Sale of Mr. Sanday's Leicester Sheep at Holme Pierrepont.

The great sale of sheep from the justly celebrated flocks of Mr. Sanday took place on Wednesday, and drew together a large attendance of breeders and flockmasters from the Continent, as well as from every part of this country. Mr. Strafford officiated as auctioneer. The pens

comprised 36 rams and 245 ewes, almost all of them either prize winners, or animals which had been highly commended at the principal show in the United Kingdom. This superb flock is now being dispersed over the world. Some of the animals have gone to Australia, others to America. The Minister of Agriculture in Spain has secured several, and in other countries the esteem in which the Sandy breed of Leicesters is held has been testified to by the numerous purchases at high prices which have made at the several sales held at Holme Pierrepont. On Wednesday, large purchases were made for Austria and Prussia. Of the shearling rams, one went to Mr. Princep, of Newton Regis, for twenty seven guineas; another to Mr. Henry Mann, of Lutterworth, for twenty guineas; and a third to Mr. Massey, of Hurlston, for ten guineas; and a fourth to Mr. John Spencer, of Dunnington Park, Melton, for the same price. For a three-shear, Colonel Inge gave thirty-eight guineas; and for another Mr. T. Harris, of Stony-lane, Bromsgrove, gave twenty-one guineas; while a five-shear fell to Mr. Spencer of Clay brook, Lutterworth, for twenty guineas. A lot of five ewes obtained fifty guineas from Mr. Cresswell, of Ashby-de-la-Zouch; another, thirty-five guineas from Mr. Dean Derbyshire; a third, the same figure from Mr. Dabbs, of Seckington; two others, forty-five guineas and thirty-five guineas respectively from Colonel Inge; one twenty guineas from Mr. Dester, of Tamworth; and a lot of four, forty guineas from Mr. Cresswell. A lot of five shearling ewes was knocked down to Mr. Horsfall at eighty-two and a-half guineas, their destination being Koingsberg; another at thirty-seven and a-half guineas to Mr. Hurlburt, for Prussia; and another for eighty-five guineas to Mr. Fortescue, Aberdeen. Summary of sale: 37 rams £688 16s.—average, £18 12s. 4d.; 174 aged ewes, £1,026 7s. 6d.—£5 18s.; 71 shearling ewes, £500 6s. 6d.—average £7 1s.; total sale, £2,215 10s. Average of 245 ewes, £6 4s 8d.; total, £1,526 14s. 72 rams sold July 9, 1862, £1,905 15s.—average, £26 9s. 4½d.

**LORD POLWARTH'S FLOCK.**—This celebrated flock, which has long commanded high prices at the great Kelso sales, and whose strain is distinctly traceable in the flocks of almost all the best breeders of pure Scotch Leicesters in this country, originated in 1882, when 80 ewes were purchased, £2 15s. each, from a well known Northumberland breeder, Mr. Jobson, of Hidgley, near Chillingham, and 140 ewes from a Mr. Waddell (also, we believe, a Northumbrian breeder), at £2 14s. Where the rams were obtained from it is now somewhat difficult to ascertain. At that time, however, the most reputed breeders did not care to dispose of their rams, and it is probable that these were hired from the most famous Border flockmasters, of whom Mr. Robertson, of Ladykirk, was one.

Two years after Lord Polwarth had purchased the flock from Mr. Jobson, he commenced a sale of rams at Mertoun; and from that time, 1804, continued them every year at that place until 1852, when he sent his rams down to Kelso, where they have ever since been sold. This year it will be noticed that his Lordship realized on the average £8 11s. 2d. per head more than Mr. Stark, of Melendean, whose stock made the next highest average. We believe that the esteem in which Lord Polwarth's flock is held is due to the fact that the blood has been kept perfectly pure during the half century he has been a breeder; whereas many other of the border breeders, in a desire to improve their flocks, some ten or fifteen years ago introduced the Cotswold element, with an effect opposite to that intended. We have been unable to obtain the average prices of Lord Polwarth's every year during the fifty-eight they have been disposed of by auction, but the following averages will show how they have been gradually growing in favour; 1830, 35 at an average of £3 15s.; 1840, 46 at an average of £5 11s.; 1853, 40 at an average of £6 18s. 10d.; 1859, 44 at an average of £11 1s. 1d.; 1860, 43 at an average of nearly £17; 1862, 38 at an average of £18.

**SALES OF SHROPSHIRE SHEEP.**—Almost the last, but far from the least important of these ram sales was held on Wednesday in last week, at Grendon, near Atherstone, when Mr. John B. Lythall, the Secretary, of the Birmingham Cattle Show, sold and let thirty-five shearling and five other rams, the property of Mrs. Baker, at an average of nearly £10 each; and also disposed of fifty ewes at 52s. per head, and like number of heaves at 63s.

The annual sale of Earl of Dartmouth's celebrated Shropshire rams and ewes took place at Patsbush on Friday last, and was attended by several of the leading flockmasters of this and the adjoining counties, and went off in a very spirited and satisfactory manner. At one o'clock the company sat down in a splendid marquee, erected for the occasion, to luncheon. At half-past two o'clock the business commenced under the hammer of Mr. Nock (of the firm of Nock and Wilson, Bridgenorth), when ninety store ewes sold, averaging £2 10s.; ninety yearling ewes made an average of £2 3s. The rams also met with good competition, reaching as high as ten and thirteen guineas. Twenty-one were sold at an average of £8 5s.

**AUTUMN SHOW AND GREAT SALE OF TUPS AT KELSO.**—On Friday the Autumn Show of the Union Agricultural Society and the Great Annual Tup Market took place in the Poor-House Field, and was a great success. The prize animals were, as usual, scrutinized with much interest by the farmers present, and it was universally admitted that the awards of the judges were given with the strictest impartiality. During the day the show-grounds were visited by His



Grace the Duke of Roxburghe, President of the Society; Lord Polwarth and the Master of Polwarth, Mr. Grant Suttle, Mr. Prescott, Mr. Coatesworth, of Cowdenknowes, &c., &c. The gentlemen who officiated on this occasion as judges were—for Leicesters, Mr. F. P. Lynn, Mindrum Mill; Mr. Thomas Cockburn, of Menslaws; and Mr. Melvin, Bonnington. For Cheviots, Mr. Clay Winfield; Mr. John Douglas, Tinnis, and Mr. Andrew Douglas, Swinside Hall. The list of premiums was as follows:—Leicester sheep: For the best shearing tup of the pure Leicester breed, Mr. Simpson, Courthill, £5; for the second best, Lord Polwarth, £3; Mr. Torrance, Siserpath, commended. For the best two-shear, Mr. Simson, Courthill £3; for the second best ditto, Mr. Roddam, of Roddam, £2 Mr. Purves, Linton Burnfoot, commended. For the best tup of any age not exceeding four shear, Mr. Simpson, Courthill, £3. For the best pen of five Leicester gimmers or shearing ewes, Mr. Wilson, Haymount, £3. Cheviot Sheep: For the best two tups of the pure Cheviot breed, not above once shorn, £5; and for the best tup of the same breed, not above thrice shorn, £3, Mr. Elliott, Hindhope; for the second best ditto, Mr. Clarke, Ilderton, £2; for the best pen gimmers of the same breed, Mr. Elliot, Hindhope, £3.

## Horticultural.

### Light in Plants.

This light may be classified into two kinds—first, continuous, mostly phosphorescent; second, in the form of lightning.

Decaying wood belongs to the first. A fungus (*Byssus phosphora*, L.) has till lately had the credit for it; but Betzius Von Humboldt and Bishop Argadh (another Swede) agree in ascribing to the wood itself the faculty of shining.

Any kind of wood, if we believe Dessaniges, can get phosphorescent under certain conditions—viz., a proper degree of decay, thermometer 46° to 53°, sufficient dampness and atmospherical air. We find it, however, mostly with alder, beech, white pine, and willow wood. They shine before actual decay, but moisture rules the intensity of the light—the less moisture the less light; no moisture, no light. Where the shining has ceased it can be restored by a little water thrown on the wood, and by enveloping it with paper or canvas.

Temperature, we believe, is of no account so the thermometer does not exceed either the boiling or the freezing point, as in either case the water would disappear.

But not decaying wood alone has this phosphorescence; other parts of plants have it

when decaying. Thus Meyer tells us that, wandering by night through a forest he found decaying mushrooms in a phosphorescent state, and that he took up the shining matter with his stick and rubbed it against trunks of trees.

Tulasne has given us a very interesting treatise about the shining of dead oak leaves. Moisture is in every instance a necessary condition. Of all things, however, it is the diptam which is best known for its remarkable and beautiful light circling round the whole upper part of the plant, when, after warm and calm eays, a match is brought near it. It is the ethereal oil evaporated by the plant which burns, and makes it appear as if the atmosphere round the plant was in a mild blaze. The beauty of this phenomenon is worth trying it, and enduring the failures which an unfit condition of the atmosphere will often bring.

Less strong than the diptam, but stronger than decaying wood, shines the milky sap of *Euphorbia phosphorea*. Martins, during his travels in Brazil, found it to shine mostly when a storm was coming on. He also relates that he was told by the natives of an *Euphorbia* growing in impenetrable thickets of several thousand square feet, which often spontaneously ignite, emit a column of smoke for a while, and ultimately blaze in a clear flame.

But not dead matter alone has this phosphorescent quality. We find it in living plants—for instance, *Rhizomorpha subterranea*, a fungus found on decaying trunks or on timber used in moist mines, emitting light from the tops of its branches so strong that, according to DeCandolle, you can see to read by it; or *Agaricus olearius*, a fungus growing on the olive tree, which shines best when vegetation goes most forward, and which fact Tulasne therefore calls “une manifestation de l’activite de sa vegetation.”

The cause or causes of the phosphorescence of these plants has not been found. A very long range of experiments under all temperatures and at the various stages of vegetation would be required. This explains also why the statements of botanists differ so much—why one has never found that such and such plant has emitted light; why the other asserts that only the lamellæ of different fungi had it, &c. We must, however, here mention a no less interesting phenomenon than either of those already stated. It is offered to us by *Shistostega osmundacea*, a moss growing in caverns and grottoes, which in day-time is in a state of lucidity similar to the *Smaragd*. In this instance the structure of the plant, as the rays of the sun refracted on it, seems to be the cause, though we would not like to vouch for it.

We would rather speak now of the second class of light in plants—namely, where that

light appears in the shape of lightning. And the first observation it appears has been made by Linnaeus's own daughter, Elizabeth Christine, who found that one evening in the year 1762 the orange flowers of *Tropaeolum majus* produced a kind of lightning; that is, the flowers seemed by fits and starts to dash light. She ran to her father, not believing her own eyes; but the phenomenon had disappeared when the father came, and what he had never seen or heard of he would not believe in till he had seen it himself. On subsequent evenings, however, he himself witnessed the fact, whereupon he asked his daughter to make a report of it to the Royal Academy of Sciences. This report has been accepted, and exists on the record. We are sorry that we have to add that neither the great Linnaeus, nor his daughter nor Linnaeus's son, nor any one of a great many chemists and botanists who undertook to study the matter, could to this day succeed in telling us anything better than suppositions, which were hardly uttered before upset by themselves, and amounted to nothing. If the stirring-up of observations, the reiteration of facts, the discussion of probabilities, can ultimately lead the investigating mind to the

true cause, then there is hope for our enlightenment. But as we doubt that, and will not weary our readers, we will, before we conclude this article, tell them that electricity seems not to have anything to do with these phenomena; that orange colour of high intensity and fire seems to have a good deal to do with it; that weak eyesight does not cause it, as Linnaeus naively says, and that besides Linnaeus's daughter, Lector Haggren (also a Swede) noticed it in the year 1788 on *Calendula officinalis*, *Lilium bulbiferum*, and *Tagetes patula* and *erecta*, also, but very slightly, on the orange variety of the sunflower, *Helianthus annuus*. Lastly comes Mr. Fries, and tells us that he was induced to write his essay on light in plants by one night walking about in the botanical garden (in Upsala) and seeing lightning shooting up from an isolated growing plant of *Papaver orientale*, strangely enough after having passed a large group of them without seeing anything; that he then led other persons past who did not know of it, and that he then began to study the light in plants. May he be able to enrich science with the knowledge of its true causes.—*Gardener's Monthly*.



The Hyacinth.

BY MR. WM. PAUL, NURSERIES, WALTHAM CROSS.

Of the many candidates for popular support in the present extended list of garden favorites there are few receiving more attention at the present time than the Hyacinth. Its beauty, fragrance, and variety are so many points of attraction, and the season at which it blooms is worthy of especial consideration. By the appearance of the Hyacinth winter is driven from

its last strongholds, and the garden suddenly rejoices in all the brilliancy of a summer parterre. Then the plant is of such easy culture, that while the highest attainments in the art may be reserved for the patient exercise of skill and industry, the "prentice hand" in gardening may reasonably expect to attain to fair and satisfactory results. In a word, the plant is more manageable than many of its compeers, and hence there is less fear of failure from the oversight of any of those little kindnesses and attentions which the skilled horticulturist knows so well when ad



how to apply. In treating of the culture of the Hyacinth three separate points occur to me:—1. The possession of good bulbs; 2. The season of planting; 3. After culture; and these I shall proceed to discuss separately.

1. **GOOD BULBS.**—The best Hyacinths are imported from Holland. A more beautiful sight could scarcely be conceived than the gardens in and around Haarlem in the spring and early summer months, with their acres of ground, radiant with millions of Crocuses, Tulips, Hyacinths, blue, white, red, and yellow, of the richest and most varied hues, the more grateful to the eye, and the more impressive, because following so closely on the footsteps of winter. As is well known, the culture of the Hyacinth and its allies is a speciality in Holland. I do not see why it should not be the same here, as the differences in some localities, climates, and soils of England appear to me insufficient to account for it not being so. Perhaps our horticulturists are too much occupied with other matters, and certainly it would be commercially unwise to enter the field against such skilful and indefatigable contemporaries without first acquiring a thorough knowledge of so distinct a branch of the art of gardening. We may, and I believe do grow and bloom them as well here as there. But the question remains, can we bring bulbs of *our own growth* into the market of the same quality and at the same price? The answer is, not at present. We can, in the present state of our knowledge and practice, buy and sell cheaper than we can produce.

The Hyacinth being a bulbous plant, the sources of supply, at least during the early stages of growth, depend on the nutriment stored up in the bulb the year before. Thus it will be inferred that it is as important to obtain good bulbs as to grow them well when obtained. And I would here caution the cultivator against placing too much confidence in large bulbs. True, if a bulb is sound, solid, weighty, and well stored with eliminated food, the larger the better; but there are many large, showy, frothy bulbs sold every year in Holland and in England which fail before these tests, and which it requires a practiced eye and hand to apply. Then again, there are some beautiful sorts of Hyacinths—of which Grootvorst is a familiar example—which seldom produce large handsome bulbs. On the other hand, there are some indifferent kinds which generally produce bulbs of great size and beauty. But further, bulbs of the same kind differ in value in the hands of different cultivators. In proof of it we need only adduce one fact—and whether it be attributed to the greater skill of the cultivator or to the superiority of his soil, the fact remains—that there is a difference of 20 per cent. in the prices of the different growers, and the highest priced stock always commands the readiest market. Having laid the foundation of a successful culture by the acquisition of good bulbs, let us pass to the next point.

2. **THE SEASON OF PLANTING.**—The natural period of rest for the Hyacinth is from June to October. If planted before the latter month, the shortening of the natural period of rest diminishes the vigour of growth and the beauty of the flowers. So if the planting be delayed far beyond that period, however well the bulbs may be kept, growth commences, the bulb feeds on the deposit of the previous year contained within itself without the means of recruiting the supply, and a loss of power is the consequence. Plant, then, in the month of October, applying a greater or less degree of heat, according to the season or seasons at which the flowers are wanted. If a very early, a very late, or a long succession of bloom be required, some should be planted earlier, and some later; but the month recommended above is the best, if the finest possible bloom is required, without regard to any definite period.

3. **AFTER CULTURE.**—The culture of Hyacinths falls naturally under three heads:—1, In pots; 2, In glasses. 3, In the open ground.

1. **Hyacinths in Pots.**—It is a matter of no small importance to secure a suitable soil, for although the plant in the first instance feeds on itself, the roots once in action, draw largely from the soil in order to replace the nourishment withdrawn from the bulb. A sandy loam should form the bulk of the soil, but such being usually poor, it must be enriched by a plentiful addition of manure. Cow-dung is the best of manures for the Hyacinth, and it is a good plan to obtain it in a fresh state, mixing it with the loam six months before required for use, turning the whole over two or three times in the interval, that the different substances may be well mixed together. When planting, place the bulb in the middle of the pot, setting it quite upright on a small bed of sand, and so that the apex of the bulb may be half an inch above the level of the soil. Soak the soil with water, and when well drained place the pots, in the first instance, out of doors on the solid ground that worms may not enter. Surround the sides of the pots with cinder ashes, and cover the top with about six inches of the same material. In about two months remove the pots to a cold frame, covering with a mat for five or six days, to avoid a sudden transition from darkness to light. When the mats are withdrawn, give more or less air, according to the season at which the bulbs are wanted to flower, bearing in mind that the more air given the better, provided the frost be completely excluded. The long drooping leaves which we see with some cultivators is due to a too warm or too close atmosphere. So soon as the flower-spike rises, a stiff wire should be passed between the bells the whole length of the spike, the lower end bent outwards till it reaches the circumference of the pot, winding it round the outside of the pot beneath the rim to keep the spike upright and steady. Plenty of water should be given from the time the leaves begin

to grow till the flower shows symptoms of decay, when a gradual diminution should take place. When the leaves turn yellow, water should be entirely withheld, and the bulb should be taken from the pot at the end of July, and stowed away in a dry place for planting in beds the following year. The same bulbs can scarcely be recommended for planting in pots or glasses a second year, but are very good for planting out of doors. Masses of Hyacinths may be planted in ornamental pots or baskets, forming the whole mass of one colour, or the centre and circumference of different colours; and thus ordered, they are at once elegant and effective.

**2. Hyacinths in Glasses.**—Under this form of culture we have in the Hyacinth the most beautiful of house plants in winter and early spring, arriving at the same degree of perfection in town and country. The single kinds, to my eye are always the most beautiful, are especially preferable for glasses, on account of their greater earliness and hardihood. Soundness of bulb at all times important, is more than commonly important here. Set the bulb in the glass so that the lower end, whence the roots are emitted, is almost, but not quite, in contact with the water. Use rain or pond water. Keep the glasses filled up as the water sinks by the feeding of the roots and evaporation. It is a general practice to place Hyacinths in glasses in a dark cupboard or some other place where the light is excluded, and a very good practice it is, for the roots feed more freely in the dark, and thus the system of the plant becomes better stored with food. They may remain in this situation for one or two months, according to the temperature in which they are placed, and should not be too suddenly transferred to the light. Here, as with Hyacinths in pots, when the flowering is over, the bulbs may be brought gradually into a state of rest by the diminution of the supply of water. This done, dry them, store them away, and in due season plant them in beds out of doors to bloom there the following year.

**3. Hyacinths in the open Ground.**—I have never yet seen so much done with the Hyacinth as an out-of-door plant, as I conceive might be done on principles similar to those which have been so admirably carried out in regard to "bedding plants." We have here red, white and blue—to say nothing of the so-called yellow—of innumerable shades. Surely there is ample material for a more extended application of those principles, especially if the aid of the Tulip be called in. The Tulip gives an abundance of yellow, a colour deficient in the Hyacinth. By the combination of these two flowers, a gorgeous and complete flower-garden may be had in spring, as well as in summer, and neither a repetition of the other, but each a change. The Hyacinth is an admirable spring flower. It suffers less from wind and snow, from sleet and hail, than many hardy spring flowers; indeed, almost less

than any other. To-day the snow falls, and the plant is hidden and frozen: to-morrow the sun shines, and it is as erect and as bright as ever.

Hyacinths out of doors should also be planted in the autumn (November). Let the apex of the bulb be placed four inches beneath the surface of the soil, and after the soil is put on, add two inches of decomposed manure as a security against severe frost. In February, when all fear of severe frost is gone, the manure may be removed. The same soil as that recommended for pot-culture is suitable for Hyacinths out of doors. But it may not be generally convenient to remove and replace soil in the flower garden. Well, this is by no means a *sine qua non* of success. We recommend it, but do not insist on it. The convenience of the cultivator must determine the matter. But if a soil be unusually poor, it should be enriched and watered abundantly; if close and heavy, it should still be enriched, and will usually be improved by mixing with it a good proportion of clean road or river sand.—*Extract from Proceedings of the Royal Horticultural Society.*

[The cut placed at the head of this article represents Mr. Tye's newly invented Triple and Hyacinth Glasses, manufacture England, a quantity of which has just been imported by James Fleming & Co., Seedsmen and Florists of this City. They are a highly ornamented production.—EDS. C. A.]

### The Gladiolus.

It is not the least of the recommendations of the Gladiolus as an ornamental plant that it proves to be very accommodating to the soil in which it is grown. That it will flourish in poor sand, and still better if the sand be enriched, is evident from the success which every one knows has been met with by Mr. Standish at Bagshot; but the notion which has been spreading that such deep sandy soils are necessary to it, is by no means confirmed by experience. We are now referring to the Gladioli of modern times, the glorious varieties which we owe in great part to the blood of *Gandavensis*, and which prove so ornamental when growing in the garden, and still more so, if possible, when cut for indoor decoration. These varieties, which have great constitutional vigour, grow well in soils of which Bagshot sand is a type, but they also flourish admirably in beds made up of the compost which accumulates from the emptyings of flower pots wherever a considerable collection and variety of pot plants is cultivated. Moreover they grow to perfection in deep loamy soils, provided they are well drained, and the staple is rendered friable and open by the admixture of decayed manure in a condition suitable to exert



a mechanical action on the mass. Mr. William Paul has rendered this latter fact evident in his new and admirably arranged nursery at Waltham Cross, where the soil being a rather heavy loam—we have seen these Gladioli in a most thriving state, and whence have been derived the specimens with which, though as yet but a limited grower of these flowers, Mr. Paul has won a very respectable position on the exhibition table, and a place in the prize lists. No one, therefore, need hesitate to plant them from any difficulty as to soil.

The question how these Gladioli can be brought to lend their beauties in aid of the general effect at our autumnal flower shows, is one which begins to require consideration and determination now that the growers and exhibitors of them are increasing in number. They do not appear to be quite suitable for pot culture: at least, when exhibited in this form they have as yet proved too lanky, and the plants have not borne a sufficiently furnished appearance. They are admirable flowers for cutting, and in this form doubtless they will be found best suited for exhibition tables. But then how are they to be set up? Are some exhibitors to show single spikes, and others bouquets of each kind, or are bouquets to be required to the exclusion of single spikes? We should say decidedly not, for this would be to give an undue advantage to quantity over quality. Besides, the managers of horticultural exhibitions, besides catering to please their visitors, should at least take care that every part of the institution entrusted to their control should tend to improvement in cultivation; and how can this be the case, if bouquets of the several varieties be permitted to compete with and overpower by mere bulk the single spikes grown by others who are probably more careful if not more skilful cultivators, but who possess less extensive means or less comprehensive collections. Like a Hyacinth, the beauty of a Gladiolus depends in great measure on its well furnished spike, and the size and perfect form of its flowers; but how can these points be expected to tell when a bunch is shown? Nothing, in fact, is well brought out that way but colour, and the sacrifice made by bunch showing in respect to the other qualities referred to is much greater than is compensated for by any gain in respect to a gaudy display of colour. Therefore, we say single spikes should be shown in competitive collections.

But how should they be set up? To begin with, they don't look well to our eyes in ordinary stands and boxes, which do well enough for Roses and Dahlias, but don't seem to suit the Gladiolus. We infinitely prefer the truss set up singly in one of Tye's dwarf Hyacinth bottles, which may be had plain or ornamented, as may be desired; though we imagine those of plain colours would be most appropriate. Then again the cut spike of a Gladiolus, which, be it remembered, looks better of moderate than of ex-

cessive length, provided it is well bloomed, is bare and wanting in relieving foliage. Several attempts have been made to supply this deficiency: the group as a whole has been bordered by various broad-leaved plants to form a background and margin, but broad-leaved plants don't associate well with grassy leaved monocotyledons like the Gladiolus; they look foreign to it, and seem out of place; a few of its own leaves have been sometimes used, as well as sprigs of some of the larger leaved Grasses such as *Poa aquatica*, *Phragmites communis* and the common striped ribbon grass of the gardens; of the Grasses, the best is the *Poa*, but none of them produce so good an effect, at least in our opinion as the natural foliage of the Gladiolus itself.

The result of our own observation and consideration of this subject then is this:—That for exhibition purposes, Gladioluses should be shown in the form of cut spikes; that the spikes should be of moderate and tolerably proportionate length, but above all well bloomed, not with two-thirds or more of their length undeveloped; that they should be set up singly, one spike of each variety; that they should be placed separately in Tye's Hyacinth glass; and that each spike should be accompanied only by a dressing of three or four natural Gladiolus leaves nearly as long as itself.—*Gardeners' Chronicle*.

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### How is the Horse to be put in Condition.

Country gentlemen of humane feelings still fondly cling to the old plan of giving their horses an occasional run at grass. It is so natural, they argue, for the poor things to enjoy a few months of unrestricted liberty to graze on their native prairies, and take such exercise as they please. But, besides such poetical and sentimental recommendations, the run at grass is also supposed to "fine down" and strengthen the limbs, and invigorate the constitution. But to the correctness of these conclusions we seriously demur. Such management may answer well enough as a rest for the over-worked draught horse, but is unsuitable for hunters and well-bred hacks. They gorge themselves with bulky food, get gross and fat, and thus overweight their legs; full of spirit and courage, they gallop and play, running imminent risk of sprains and other lameness, and often come up with kicks and blemishes, and even with damaged wind, from undue exertion taken whilst the stomach has been overloaded. They lose, moreover, their hard condition and their ability to go, and proper feeding and well-regulated exercise must be continued for several months to recover the lost muscle and strength of wind and limb.

For mares and foals, for young, unbroken colts of quiet temper, and for draught animals of more placid temperament, a grass field during the summer is all that can be desired. For hunters, hacks, and the lighter sort of horses that have been in good condition, it is, however, an expensive and dangerous treat.

Horsemen are beginning to appreciate the detriment to the health and constitution, and the waste of time and trouble entailed by allowing their horses, as was the old fashion, to get out of condition when not wanted for several weeks or months. They rightly discover that it is more expensive to turn a horse, after the hunting season for example, to grass, thus allowing him to lose his muscle and strength, and again have him in good order for October, than it would have been to keep him all summer in a comfortable roomy box or well-sheltered yard, allowing him a little corn with his hay and green food, and enjoining daily walking, trotting or other suitable gentle work. The desirability of maintaining horses in continuous good condition becomes all the more reasonable when it is considered that condition, though somewhat of an artificial state, is synonymous with the highest health and vigour. What possible advantage can there be in loading the wiry muscles with useless and cumbrous fat, and weighting the frame as if it was intended for Bingley Hall or Baker-Street? The legs do not suffer as is sometimes supposed, by keeping the horse constantly in fair condition. On the contrary, the carcass being light, the limbs are not overweighted, and like the rest of the body, are also strong, and able to bear their burden. Nothing, we may remark, tends more to shaky, weak, tottering legs than using for fast work horses that are heavy and overloaded with beef, and whose limbs want the toughness and strength which condition alone can give. Although kept during the summer in state fit to go, it is, however, by no means necessary that the animal be subjected to continuous hard work; he need not be galloped or trotted at a "two forty" pace over hard roads. When, like the hunter during the spring and summer months, he is not required for full work, his exercises may be relaxed to an hour or two of walking or gentle trotting exercise, he may be profitably used as a hack, or even for light harness work. A handful of clover or vetches pleasantly vary his diet, and exert besides in a natural way that "cooling" influence on the blood which is so much talked of among stablemen.

Kept in the manner suggested, the horse is at any time in three or four weeks fit for any reasonable moderate work. A little restriction in his hay, a few more oats, his exercise gradually increased, and he will cheerfully and easily perform his allotted work on the road or in harness, whilst with a few preparatory gallops he will not even disgrace his owner if he turns out to the cover side in October. Here the horses

that have run at grass during the summer make themselves unpleasantly conspicuous. The first spurt covers them with lather, heavily they toil over a field or two, boring blunderingly at their fences, and soon give in dead beat; or if senselessly urged along, are apt to sink from congestion or inflammation of the lungs. The muscles of respiration, like those of the limbs and other parts, are weak, and incapable of continued, severe exertion.

To many of our readers it is an important practical question how such an animal can be best rendered servicable. How can his capabilities be most speedily brought to perfection? How can he be prepared so that his duties will be performed easily to himself and satisfactorily to his master? To condition, as to many other things useful and valuable, there is no royal road. The result is to be obtained only by proper feeding, exercise, and grooming. Oats must be the staple food, and with a horse fresh from grass, or that has been living on green food, they should at first be mixed with bran, which will keep the bowels open, and prevent the evil effects which are so apt to follow from a sudden transition from soft, bulky, laxative food to drier and more nutritive fare. From 12 to 15 lbs. of oats, according to the size and appetite of the animal, is a fair daily allowance, and should be given cracked or bruised, not ground, and with a handfull of chaff. For horses intended for fast work beans must be used sparingly, as they are apt to cause indigestion, and interfere with free respiration. Amongst farmers the prevailing dietetic error is allowing excess of hay. The country lad, who often acts as the farmer's groom, is accustomed to see the farm horses' racks filled to overflowing, and acting upon the half true, half false principle that "what is good for the goose is good for the gander," he thinks the riding horses starved unless they have in the rack and under their feet as much hay as would last them for a week. It cannot be too often or strongly insisted on that horses, and, indeed, all animals, should be fed regularly, and should never have more food than they can clear up at once and with relish. From 15 lbs. to 20 lbs. of sound English or good clover hay is a liberal allowance for the lighter sorts of horses, of which at present we are speaking. We would never have a horse restricted in his allowance of water, except for several hours before he is required for work; and to prevent his taking at a time more than is good for him, he should be offered it at frequent short intervals of not less than 5 or 6 times a day. If horses are kept, as they should be, in roomy, loose boxes or commodious yards, regular daily exercise during the summer months, and when not in work, is not essential. But all horses in use, or intended to be used within three months for hunting or other such work, must have daily exercise, which ought to be gradually increased in severity and duration until the horse is cap-



able of performing easily the work required of him. To the discretion of the groom or his master must be left the various questions as to the length of time the horse is to be out, the nature of the exercise, whether he is to go out in cloths, &c. But however these matters be decided, the horse on coming in must be well groomed, rubbed dry, and made comfortable. Where clipping or singeing is practised a rug is advisable; but the loads of clothes often used are useless and injurious, only securing a sleek, glossy skin with less labor to the groom, but at the sacrifice of the poor animal's comfort and health, and with the certainty of rendering him very susceptible of cold. The same, or still more serious, objections attach to the common practice of keeping the stable too warm. For young horses recently taken up from the fields or yard the temperature should not exceed 50, whilst from 55 to 60 degrees will be sufficiently warm for any horses.—*North British Agriculturist*.

### Miscellaneous.

**ANOTHER BALLOON ASCENT.**—THE BRITISH ASSOCIATION.—On Monday, Mr. Glaisher, the superintendent of the meteorological department of the Royal Observatory, made a second ascent from the works of the gas company, in Wolverhampton. As on the first occasion, so also now, the ascent was made in Mr. Coxwell's mammoth balloon, and under the direction of that aeronaut. The instruments taken up were certain of them the same and others similar to those used on the previous ascent, the only exception being that of Thompson's electrometer, which was destroyed in the descent upon the former occasion. That instrument being absent the notes will be confined to the primary observations contemplated by the association—namely, the humidity and temperature of the atmosphere, with its pressure, the vibration of the needle, and how much (if any) ozone there is in the atmosphere away from the earth. About 85,000 cubic feet of very light gas was turned in, and shortly before one o'clock, Mr. Glaisher having shipped all his instruments and arranged them on the board before him, preparations were made to leave the earth. One-fourth of the quantity of gas supplied was let out, with a few bags of ballast, and the signal having been given, the balloon left the earth at two minutes past one, amidst the warmest plaudits from Lord Wrottesley and a large number of the gentry of the neighbourhood. The ascent was a most steady one, the wind was moving about 20 miles an hour in the lower region of the atmosphere, the sky was clear, and the sun was shining brilliantly. The direction in which the balloon was first wafted was south by west, about half a point to the west. On attaining to about 10,000

feet the upper current of the atmosphere was met with; the voyagers then got into a southerly direction; were seen due south, then a point or two to the east; and in about a quarter of an hour after they left the earth's surface they were north by east, about half a point to the east. They then seemed to take their first dip from a high to a lower altitude, and then again to ascend; and it was thought a second dip was made during the time that they were in sight, which was nearly two and a half hours, for so clear was the atmosphere, so immense the size of the balloon, and so slow the motion of the wind, that it was 3 25 p. m. before the machine was lost to the sight of the spectators on the ground whence it ascended. The direction taken seemed to be over Birmingham, and towards Coventry. Great interest is felt in the experiments now being made, the results of the previous experiments being, in many respects, contrary to all views hitherto entertained on the points of meteorology that are now being investigated. For instance, a cloud one mile thick was passed through on the first occasion, without there being any dew deposited on the most sensitive hygrometer, and no ozone was found in the air, notwithstanding that, in experiments on the earth, the most ozone was found at the high altitudes. For the experiments of Monday, ozone papers were specially made by Dr. Moffat himself. The balloon descended at five minutes past four o'clock, at Solihull, 25 miles from Wolverhampton, after attaining a height of four and a half miles, where the temperature was 24 degrees, the barometer about 13 inches, and the dew point minus ten.

**A SKYLARK PREACHING A SERMON.**—There is no such thing as a song-bird in Australia; there are birds who chatter, birds who shriek, but no birds that sing. Well there was a young man who went from England as a gold-digger, and was lucky enough to make some money, and prudence enough to keep it. He opened a "store"—a kind of rough shop where everything from candles to coffins are sold—at a place called "The Ovens," a celebrated gold-field, about 200 miles from Melbourne. Still continuing to prosper, he, like a dutiful son, wrote to his father and mother to come out to him, and if they possibly could, to bring with them a lark. So a lark was procured, and in due time the old folks and their feathered charge took ship and departed from England. The old man, however, took the voyage so much to heart that he died; but the old woman and the lark landed in sound health at Melbourne and was speedily forwarded to Mr. Wilestead's store at the Ovens. It was on Tuesday when they arrived and on the next morning the lark was hung outside the tent, and at once commenced piping up. The effect was electric. Sturdy diggers—big men, with hairy faces and

big brown hands—paused in the midst of their work, and listened reverently.—Drunken, brutal diggers left unfinished the sentence and looked bewildered and ashamed. Far and near the news spread like lightning—"Have you heard the lark?" "Is it true, mate, that there is a real English lark up at Jack Wistlead's?" So it went on for three days, and then came Sunday morning. Such a sight had not been seen since the first spadeful of golden earth had been turned! From every quarter—east, west, north, and south—from far hills and from creeks twenty miles away, came a steady concourse of great rough Englishmen, all brushed and washed as decent as possible. The movement was by no means preconceived, as was evident from the half-ashamed expression of every man's face. There they were, however, and their errand was to hear the lark! Nor were they disappointed. There, perched in his wooden and iron pulpit, was the little minister; and as though aware of the importance of the task before him, he plumed his crest and lifting up his voice sang them a sermon.

It was a wonderful sight to see, those three or four hundred men; some kneeling on the ground; some sitting with their arms on their knees, and their heads on their hands; some leaning against the trees with their eyes closed, so that they might the better fancy themselves at home and in the midst of English corn-fields once more; but sitting, standing and lying, all were equally quiet and attentive; and when, after an hour's preaching the lark left off, his audience slowly started, a little low-spirited, perhaps, but on the whole much happier than when they came.—*Boston's Home Pets.*

### Hints for October.

October is one of the most active months in the year with the gardener, orchardist, and nurseryman. A multitude of labours demand simultaneous attention, and it requires the most untiring energy and industry on the part of every one who has any considerable charge on his hands to see that every thing is done at the proper time and in the proper manner. Fortunately, in this country, our October weather is delightful—dry, cool and bright, generally, and therefore eminently favorable for the rapid and proper execution of all out door work.

Transplanting of all hardy trees, shrubs, and plants usually begins here in the north about the 1st of October; further south it must be deferred later. It is by no means necessary to wait until the leaves have fallen. If growth has fairly ceased, and the wood has become firm, trees may be removed; the leaves must be taken off to prevent shrivelling, and the roots must be carefully guarded against exposure until they are again placed in the ground. Autumn planted trees should by all means be secure against the

winds, either by staking or banking up, and they should be well mulched besides.

Neglected orchards should be renovated by manuring and ploughing or spading about the roots. This should never be deferred till spring because during the winter and spring the sod decays and the manure dissolves, and abundant food is thus prepared the trees next season.

Kitchen and garden crops for winter and spring use require nice management to keep them in a proper condition. Such as are taken up and placed in the root-cellar should be handled when dry, and the cellar should be clean and sweet, and perfectly free from moisture both above, and below; it should also be kept cool as possible, but not admit frost.

Such of the bedding plants as it is desired to save for another season, should be carefully lifted early, and either potted or planted closely in boxes, and placed where they will have light, and not freeze. Many of the bedding plants, if taken up carefully and in good season, may add materially to the beauty of the green-house through November! Many of the late flowering annuals are useful in this way.

Hardy bulbous roots should be planted immediately, yet it can be done any time before the ground freezes. There are certain things that vegetate early in spring, and should therefore always be planted in the fall, such as gooseberries, currants, rhubarb, and all hardy spring flowering shrubs and herbaceous plants. A good bloom next spring may be secured by planting now, but will be lost if the planting be deferred till next spring.—*P. Barrey.*

**ANIMAL INSTINCT.**—I knew of a jackdaw that often used to eat the gum that exuded from plum trees, and always did so when it was well. In connection with this subject, it may as well be mentioned that a careful observer would find himself repaid by watching the modes of cure employed by sick or wounded creatures. We all know that the dog and cat resort to grass when they feel out of health, and hares to a species of moss. I was also told, on the authority of the eye-witness, that a goldfinch, which had been struck by a hawk and wounded, made its way to a dry puff-ball, tore it open with its beak, and dusted the wounded shoulder with the spores, thereby stopping the effusion of blood. The spectator was greatly surprised at this incident, and being induced to try the effects of the same remedy upon a wounded finger, found that the experiment was completely successful.—*Routledge's Illustrated Natural History.*

**CHLORIDE OF LIME AS AN INSECTICIDE.**—In scattering chloride of lime on a plank in a stable, all kinds of flies, but more especially biting flies, were quickly got rid of. Sprinkling beds of vegetables with even a weak solution of this salt effectually preserves them from the attack of slugs, caterpillars, butterflies, mordellas, &c.



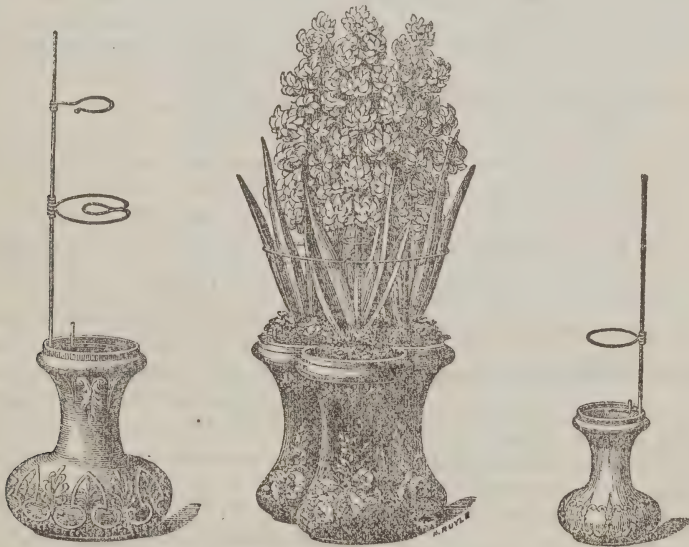
It has the same effect when sprinkled on the foliage of fruit trees. A paste of one part of chloride and one-half part of lard, placed in a narrow band round the trunk of a tree, prevents insects from creeping up it. It has been noticed that rats and mice quit places in which a certain quantity of chloride has been spread.

### Editorial Notices, &c.

#### Agricultural and Veterinary Instruction.

Arrangements are being made for opening a class of young men for the study of the Veterinary art and the principles of agriculture, in Toronto, under the auspices of the Board of Agriculture, to commence about the middle of January, and to continue for five or six weeks.

Mr. Smith, a licenciate of the Veterinary College of Edinburgh, and Veterinary Surgeon to the Board of Agriculture of Upper Canada, will give instruction in the anatomy, physiology and diseases of the Horse, and farm animals generally, and Professor Buckland, assisted by the Professors of Chemistry, Geology, and Natural History in University College, will take the various branches of science that relate to the practice and theory of agriculture. It is hoped that a considerable number of young farmers from different sections of the country will avail themselves of such an opportunity of improving themselves in a knowledge of the principles of their important art. Full particulars hereafter.



## DUTCH FLOWER ROOTS.

THE SUBSCRIBERS BEG TO ANNOUNCE that they have just received their annual importation of Bulbs in good condition—consisting of *Double and Single Hyacinths*, \$1.00, \$2.00, and \$3.00 per dozen. A fine assortment of *Tulips*, from 50 cents to \$2.00 per dozen. *Crocus*, 12 to 20 cents per dozen, and at \$1.00 and \$1.50 per 100. *Polyanthus*, *Narcissus*, 12 to

15 cents each.

Descriptive Catalogues furnished gratis on application. They would also call attention to their fine stock of English Hyacinth Bottles, with supports, suitable for growing Hyacinths in winter, and for holding parlour bouquets in summer. (See above cut.)

### JAMES FLEMING & Co.,

Seedsman and Florists, Corner of Yonge and Queen Streets, Toronto.

Toronto, Oct. 27th, 1862.

tf.

**Horse Infirmary and Veterinary Establishment**  
**Corner of Bay and Temperance**  
**Streets Toronto, C. W.**

A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

And also begs to announce that Veterinary Medicines of every description are constantly kept on hand:—Such as, Physic, Diuretic, Cough Cordial, Tonic Condition, and Worm Balls and Powders. The constituents composing the Cough-balls, have been found (by Professor Dick, of Edinburgh) most serviceable in alleviating many of the symptoms of Broken-wind or Heaves in Horses. Colic Draughts, &c., a mixture which owners of Horses should always have beside them.

Liniments for Sore-throat, Sprain, Curb, Spavin, Ringbone.

Blistering Ointments. Liquid and sweating Blisters.

*Horses bought and sold on commission.*

Toronto, Aug. 30th, 1862.

**THE**  
**JOURNAL OF THE BOARD OF ARTS**  
**AND MANUFACTURES,**  
**FOR UPPER CANADA,**

Is Published on the first of every Month,

AT \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**FOR SALE!**

**Avrshire Cattle, Leicester Sheep, and Berkshire Pigs.**

THE Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Specimens from his *Prize Herd* will be on Exhibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.

Aug. 30th, 1862.

6-mos.

**Contents of this Number.**

|                                                                      | PAGE. |
|----------------------------------------------------------------------|-------|
| Hints for November.....                                              | 641   |
| The Wire Worm.....                                                   | 642   |
| Short-Horns as Show Stock.....                                       | 643   |
| Experiment with Sheep.....                                           | 645   |
| Farm Capital.....                                                    | 647   |
| The Agriculture of Sweden.....                                       | 648   |
| Town Sewage.....                                                     | 652   |
| The Value of Food.....                                               | 653   |
| South Australian Farming.....                                        | 654   |
| Agriculture of Colorado Territory.....                               | 656   |
| Weedy Neighbors.....                                                 | 657   |
| Use of Leaves.....                                                   | 657   |
| Temperature of the Earth under Sod and under Cultivated surface..... | 658   |
| Selection of seeds of the Cereals.....                               | 659   |

**AGRICULTURAL INTELLIGENCE :**

|                                                                                              |     |
|----------------------------------------------------------------------------------------------|-----|
| Michigan State Fair.....                                                                     | 660 |
| Kerry Cattle.....                                                                            | 661 |
| Sale of Mr. Sanday's Leicester Sheep....                                                     | 661 |
| Lord Polwarth's Flock, Sales of Shropshire Sheep, Autumn Show and Sale of Tups at Kelso..... | 662 |

**HORTICULTURAL :**

|                      |     |
|----------------------|-----|
| Light in Plants..... | 663 |
| The Hyacinth.....    | 664 |
| The Gladiolus.....   | 666 |

**VETERINARY DEPARTMENT :**

|                                          |     |
|------------------------------------------|-----|
| How is the Horse to be put in Condition? | 667 |
|------------------------------------------|-----|

**MISCELLANEOUS :**

|                                                              |     |
|--------------------------------------------------------------|-----|
| A Balloon Ascent. A Sky-lark. The Colour of the Sea, &c..... | 669 |
|--------------------------------------------------------------|-----|

**EDITORIAL NOTICES :**

|                                                      |     |
|------------------------------------------------------|-----|
| Agricultural and Veterinary Instruction &c., &c..... | 671 |
|------------------------------------------------------|-----|

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

Is published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
**Canadian Agriculturist,**

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, NOVEMBER 16, 1862.

No. 22.

**Excrements of Poultry as Manure.**

It has been known at least from the times of the ancient Romans, that the excrements of domestic fowls, and birds in general, possess highly fertilizing properties. A thrifty farmer will, therefore, carefully preserve the dung of his poultry yard and pigeon cots, and apply it, mixed with earthy matters, as a dressing for his cultivated crops. As the feces of birds are discharged through a single aperture, they possess the combined properties of both the solid and liquid excrements of other animals.

Poultry dung is one of the most powerful manures; and is, therefore, worthy of greater consideration than is generally bestowed upon its collection, especially as it so soon decomposes, and consequently loses so much ammonia; and it would lose a still greater quantity of that gas, did the excrements not dry quickly, and thus prevent a further decomposition of the urea. The strongest are those of pigeons and domestic fowls—a fact easily explained by the circumstance of their living chiefly upon grain, insects, and worms, while geese eat grass also. That we may lose none of the ammonia developed during the putrefaction of poultry dung, we should do well to strew the yard and house in which they are kept, with soil abundant in humus, for then the ammonia of the manure will be combined with the humid acid of the earth. The strewing of the ground with sand, sawdust, &c., as commonly practised, is in this point of view, of no use whatever.

The excrements of pigeons were carefully ex-

amined by Mr. Humphrey Davy, and Sprengel. Davy found in 100 parts by weight, 23 parts of substances, soluble in water, consisting of urea, urate of ammonia, common salt, and some others. According to the latter, pigeon-dung half-a-year old contained only 16 per cent of bodies soluble in water, consisting of very little urea, but of a large proportion of carbonate sulphate, and humate of ammonia, common salt, and sulphate of potash. The other 84 parts insoluble in water consisted of coarse siliceous sand, silica, phosphate of lime and magnesia, traces of alumina, and oxides of manganese and iron. The abundance of soluble substances explains the quick effect of pigeon dung, and also shows us once more the great value of mineral manure.

When the droppings of geese come in contact with the grass in pastures they destroy it in a short time, so that farmers do not readily allow geese to have access to pastures; not to mention that, when the herbage is rendered foul by the excrements of these poultry, it becomes loathsome to other animals. The speedy injury inflicted on plants by goose-dung is occasioned partly by the uric acid it contains, and partly by the ammonia which is so soon generated and developed on decomposition. When rain happens to fall, these caustic substances are diluted, and the grass grows the best in places where the excrements lay, as may be seen in any goose pasture.

As poultry dung is very rich in powerfully manuring matters, easily soluble in water, it should be applied only in very small quantities; and, in order to affect its due distribution

as it is generally dried strongly together, it must first be reduced into a fine state by thrashing, or other means. In Belgium they employ it particularly for manuring their flax, and calculate the annual value of the dung of 400 or 500 head of pigeons at 25 or 30 rix-dollars, (about £5 or £6 sterling). Poultry dung must always be used as a top-dressing, or only harrowed in very lightly; and it should be spread over the ground when there is no wind: we should generally choose damp, but not wet weather, for the purpose, otherwise the many soluble substances would be carried too deep into the soil, or washed away altogether. If a meadow be manured with poultry dung, and sheep driven on it soon afterwards, it is almost entirely eaten bare by them, probably on account of the many salts, including common salt, contained in this manure. Like all other manures containing much ammonia, it soon destroys moss in meadows. When it is wished not to employ poultry dung by itself, it will be found best to mix it into a common heap with some soil rich in humus; a soil of this kind should be used with all organic remains containing much nitrogen, as all loss is thereby prevented. How much, however, of this invaluable manuring substance (nitrogen), in the state of ammonia, is every year wasted on all farms, it is impossible to say.

To the excrements of birds belong also the dung of the cormorant or gull, which occurs in immense quantities on some islands lying off the coast of Peru, and is named Guano. It is used in Peru with the most striking effects in manuring the maize-fields. Vanquelin and Fourcroy, who undertook a chemical examination of the "Guano," found it to contain 25 per cent. of urate of ammonia, and urate of potash, as well as the phosphates of potash, a fatty substance, and some silica. According to Klaproth it consists, on the contrary, of much humate of ammonia, common salt, phosphate of lime, some animal remains, and sand. More minute subsequent remains have shown that guano is very variable in its composition, from differences both of climate and situation.

### Vice versus Labour.

Under the above heading we find in a recent number of the *Mark Lane Express*, an excellent and highly toned article on the moral and social condition of the cultivators of the

soil, signed 'A MAN O' THE MEARNS, from which we select the following extract, the length of which will be justified by the importance of the truths enunciated, and which are of universal application:—

In all ages and in all kingdoms of the world, *vice* has proved itself diametrically opposed to *labour*, and for the most cogent and tangible reasons will of necessity continue to do so to the end of time. Virtue, industry, and wealth, whether viewed in an individual or in a collective or national light, have always been considered synonymous terms; and so have immorality, idleness, and poverty. Such is Nature's irrevocable fiat, pronounced against every race and against every social rank of the human family. Neither kings nor queens, peers nor parsons, are excepted any more than country squires, farmers and agricultural labourers. Wherever we find virtue or vice, whether in the palace or in the cottage, there we are also sure to find their respective awards in some form or other. We may as well think to gather figs of thistles as to realise the contrary. Indeed, it is well for mankind that it is so; for had the reverse been true, the heart recoils from the contemplation of what would have been its inevitable consequence.

There is, perhaps, no branch of industry where immorality is attended with more ruinous results than in agriculture, more especially amongst the labouring population; consequently there is no place where virtuous habits ought to be more sedulously cultivated, both by precept and example, than in the cottage of the agricultural labourer. We repeat, *both by precept and example*; for if landowners and their factors (stewards) and tenants spend immoral lives, it is hopeless to think of a virtuous, industrious, and prosperous peasantry.

The reason why immorality is attended with results so adverse in agriculture arises from the heavy character of the work and the fidelity with which it must be executed in order to obtain from the soil abundant crops, such fidelity being incompatible with loose, immoral, and vicious habits. There are, no doubt, "roughs" who will go through a vast amount of work in a short time, if you will only give them drink, or in some way or other bribe them to do so, and then look sharp after them; but "fits and starts" of this kind are always attended with shortcomings, that do far more than counterbalance any benefit derived from them, while such work can never be performed as it otherwise would be, consequently it is never followed by the same train of propitious results. In other words, "the blessing of an Overruling Providence never has attended such a system of things, never will do so; for although fruitful seasons are given to both good and bad, yet we have Divine authority for the conclusion involved in



the above characteristic difference (Lev. xxvi. 33, and Isaiah i. 19, 20)—a difference involving the violation of Nature's laws and its never-failing punishment, as we shall now proceed very briefly to show.

*Immorality is ruinous to both body and mind.* Those who indulge in vice of any kind are guilty of a species of self-destruction; for apart from the momentous question of everlasting punishment in a world of spirits, they impair their physical and intellectual faculties during the currency of their lifetime on earth, while they greatly shorten the mortal period of its duration. The nervous, muscular, and osseous systems are soon broken up, and rendered unfit to perform their respective functions in the animal economy; and as a natural consequence, the body of the agricultural labourer becomes less and less able to execute its daily task. Thus the nervous tissues become relaxed, and consequently they lose their natural tone. The sensual pleasures of the voluptuary cease to be relished. And were this all, the loss would be small; but the nerves have other functions to perform than those connected with the senses: for it is now an established fact that all those processes in connection with digestion and the nutrition of the body are greatly dependant upon the healthy action of the nerves, while all the muscles of the body, voluntary and involuntary, are entirely under their control, so that when the former cease to perform their functions, so also, of necessity, must the latter. But the tissues of the muscles also become relaxed, and thereby lose their contractile powers; so that the labourer, by immorality, not only sacrifices his muscular strength, so essentially necessary at all the heavy work of agriculture, but the muscles of the heart, and all the involuntary muscles engaged in the performance of the other vital processes, also lose their contractile force, consequently they cease to perform their functions normally. Hence the prostrate condition of the labourer after a night's debauch, and the rapidity with which infirmity of every kind overtakes him—even the withering hand of old age before he reaches the natural meridian of life.

With regard to the intellectual faculties of the mind, they also become impaired in a similar manner; the professional skill, judgment, discrimination, memory, &c., of the agricultural labourer becoming of a lower and lower standard as the physical system is broken up by immorality. It is now an established fact that, in the cultivation of the mind, as in the education of youth, the body must at the same time be physically trained before successful results can be realized. And just so in the *vice versa* philosophy; for if you lower the standard of the physical functions, you at the same time lay prostrate with them the more ennobling faculties of the mind.

Such is the very general outline of the effects produced upon the body and mind of the agri-

cultural labourer by immorality. In many respects, the details are of a nature such as to prevent their discussion, practically, in the columns of an agricultural journal. The subject divides itself into three heads—the physical, the intellectual, and the religious, or spiritual; and these, in practice, can and ought never to be separated the one from the others; for their combined action is essentially necessary to make the cottage of the labourer virtuous, industrious, and happy; and therefore each of them requires to be thoroughly understood, and brought home to every cottage hearth, as a practical question of daily life, for professional consideration. No doubt, in a purely professional light, the skill and the handicraft of the labourer, or the science and practice of his profession, are mainly included in the former two; but in the reformation of the morals of the people religion cannot occupy a secondary place in the cottage of the poor man, any more than in the palace of the prince; for according to the purity of the religious standard, so will be found the morality of the family, high and low, rich and poor.—Now as the physical and intellectual standards are dependent upon the moral, as has already been shown, the importance of religion is manifest. Much is now being said about the low standard of morality in Scotch bothies; but, unfortunately, this low standard is not confined to bothies, and the bothy system did not arise until a falling-off of religious principle and morality was first experienced. So long, for example, as the farm-servants of the father of the writer attended and respected family worship regularly every night, there was no clamour for a bothy: but when they began to sneer at the “Big-Ha-Bible” and those who kept family worship, and to absent themselves on Sunday evenings, so as to avoid being examined, or as Burns had it, “targed tightly,” on the “Shorter Catechism,” and thus have their ignorance of religious truth exposed, and otherwise to live an irreligious and immoral life, nothing would satisfy them but “a bothy and their meal,” and as their conduct in the kitchen could no longer be tolerated, a bothy was consequently built for them. And now that a revival of religion has taken place, and that family worship is again beginning to be respected by all, and cherished by very many, in the castle, farm-house, and cottage, this vital work of Grace is beginning to produce its legitimate fruits, so that the moral work of reformation thus begun cannot fail, in due course of time, of extending itself to bothies, when the more thoughtless unmarried labourers, male and female, wherever they live, will be obliged to succumb to the authority and example of the better-behaved. As yet, however, it is no easy matter to select virtuous, intelligent, and industrious farm-servants; and this is equally true, whether they are married or single. At the same time a separation of the sheep from the goats is evidently taking place in every rank of society,

both in town and country; and the labourers of the present day are not such bad characters as they were some time ago, or when bothies first began to be the common plan.

## Application of Chemistry to Agriculture.

[TRANSLATED FROM THE FRENCH.]

"The application of chemistry to agriculture has been attended with results unquestionably beneficial to that science. True, there have been some disappointments, but they proceeded chiefly from expecting too much of the science, or from a wrong interpretation of its laws. In making use of figures which result from analysis as correct indications, when they ought not to be taken in their absolute terms; in taking account of the multiple circumstances which tend to modify the principles of chemical reactions when they pass from laboratories into the heart of arable land, owing their effects to contact with the roots of plants, we throw great light on agricultural operations, and, in the end, reach a production more economical and abundant. For this reason the names of Bossingault, Payen, Lawes, Gilbert, Way, Anderson, and many others have become popular amongst the cultivators of France and England; but in Germany another chemist has gained by his labours and writings great fame, and has retained it throughout the whole of Europe. A little adventurous, and apt occasionally to be carried away by his imagination, M. Liebig—now one of the eight foreign members of the Academy of Science of the Institute of France,—has upon several occasions, given to agriculturists advice which does not appear to bear the stamp of prudence. In chemical agriculture experiments out to be conducted with wise deliberation. It costs too much to leave unrestrained a new system; but setting aside some too-determined efforts, which have only ended in disappointment, M. Liebig has written many good works, so that one ought to listen to him with respect; besides, one may learn much, by reading his numerous writings, beyond what is attached to the subject, from the lively and masterly manner in which it is treated. M. Liebig published for the first time about 1846, a series of about twenty-six letters on chemistry, as applied to manufactures, physiology, and agriculture. In 1851 he added eleven new letters to the preceding ones. This second series was translated into French by a chemist who died young, but who left a name illustrious and regretted—Gerhardt. We have now received a series of fourteen letters upon modern agriculture, of which Dr. Swartz, professor of chemistry to the University of Ghent, has given a good translation. We find in them many excellent principles, but also some points very disputable: thus a strong pleading in favour of mixed manures, and against the exaggerated use of simple manures, is worthy of all approbation;

but the absolute condemnation of the commercial culture of tobacco and the vine appears to us far from the limits of truth. But however this may be, the theories of M. Liebig ought to be considered by agriculturists; for this reason we recommend them to read his new letters (a volume of 264 pages, price three shillings). In addition we think it would be useful to publish two lectures, delivered the year after, at Munich, and an estimate of his doctrines, which we received from our contributor, M. Adam Muller, deputy to the Diet of Bavaria, and connected with the illustrious chemist of Munich.

In the first lecture will be found a very interesting note on the school founded by Thaer, from Moeglin; but also a critique, rather too severe, upon agricultural instructions—such at least as have been given in some places. M. Liebig cannot combine, in the same institution, practice with theory. He says the two instructions ought to follow one another, and that it is necessary to be well versed in the theory before commencing the practice. We reciprocate this opinion. The Agricultural Institute of Versailles would have been perpetuated if farms had not been annexed to it. The pupils, in leaving the institute mere theorists, would have been with advantage sent on to good farms, in this country or others, to complete their instruction afterwards as the pupils of the Polytechnic School, in the schools of application, and, above all, in the great public works, where they continue their studies before becoming masters.

M. Fouville translated the first lecture, and our learned contributor, M. Villeroy, very willingly translated the second, which is entirely devoted to the methods introduced by chemistry into agricultural science. It contains an excellent discussion upon the means of keeping up the fertility of the soil, on the importance of artificial and commercial manure, and the absurdity of losing the cleanings of towns. In his article M. Adam Muller gives a summary of thoughts of M. Liebig, such as occurred to him in a long attendance on the course of the learned chemist.

J. A. BARRAL.

### LECTURE I.\*

By BARON JUSTUS VON LIEBIG.

We celebrate the day on which, 102 years ago, the Elector Maximilian Joseph III. signed the constitutional patent of our academy. This event took place in that age so memorable for the history of sciences, when the foundation of the major part of the academies of Europe—those of Berlin, St. Petersburg, Copenhagen, Lisbon, and Dublin—showed the effect which a strong impulse had produced on the development of European mind.

\* Delivered at the session of the 26th March, 1861, for the celebration of the 102nd anniversary of the foundation of the Academy of Sciences in Munich.



In England and France they broke the trammels which hindered the culture of intellect, and in every country of the world the desire was felt to take part in the movement begun, of making useful to the people generally the riches of the intelligence newly acquired. In Bavaria, as elsewhere, was found a nucleus cultivating the sciences, but without power to give them any influence whatever upon life. The patriots who had the courage to propose a change in this state of things had to strive against difficulties on all sides; for a false science of nature, and errors which had become popular, had taken possession of the soil in which ought to have been implanted the new truths. Without extirpating old notions, those which should be popular evidently cannot take root.

To the names of Lori and Linprun is attached the imperishable honor of having commenced the struggle of light against darkness. These learned men conceived the idea of forming, with the aid of a few others, animated by the same noble sentiments as themselves, a society for the purpose of cultivating the sciences, devoting itself to their extension, and struggling against ignorance and superstition. For this purpose their design was, to commence by accomplishing what would be necessary for the well-being of the country, and practicable at that epoch. They had first to level the soil, and thus open a way for scientific discoveries. From the heart of this union of learned men, the majority of which was composed of ecclesiastics, came forth the project of founding an Academy of Sciences. When the Elector of Bavaria had signed the patent for its commencement, the issue of the battle no longer remained uncertain. The victory for truth was henceforth assured. On forming the Academy it was publicly declared that liberty of progress existed then in Bavaria, for the academical writers were free from all censure other than that exercised by the body itself. This act declared that ignorance and superstition was only a necessary evil, and that in seeking to battle with it they would render service to the state.

In conformity with the idea which animated the founder of the Academy, the labours of its members were confined principally, during the first period, to the geography and history of the country, the study of language, and alteration in the system of schools. A taste for the study of mathematics was particularly insisted on by the professors of the Academy, and a fundamental knowledge of the most general phenomena was encouraged by treatises on natural philosophy.

Whilst the law of 1759 indicated but one aim for the labours of the Society—"the diffusion of all useful sciences and liberal arts in Bavaria"—the constitutional ordinance of 1807 went a step farther. Not only ought the members to propagate scientific knowledge, but in addition, by reflections, researches, observations, and

other labours, new results would be introduced into the domains of science; while those already known would be rendered more useful.

At the time of its foundation, numerous practical questions which each understood had acquired a certain importance, and deserved to occupy the minds of these scientific men, so that every one was compelled to admit the utility of academical work, when, in conformity to its constitution, it employed itself with agriculture, hand labour, mineralogy, and metallurgy. Even the constitution of 1807 returned thanks specially to the members who would find means of improving agriculture, stimulating industry, and above all, destroying the prejudices which opposed the progress of manufactures.

In the organic law of 1827, with which commenced the current epoch, the members were particularly recommended to occupy themselves with the solution of problems of a practical nature. The Academy became "an association established under the protection of the King for cultivating the sciences, and extending knowledge by means of researches and collective works which are beyond the reach of isolated individuals."

It appears, in consequence, the Academy pursued another aim besides that of its foundation. Whilst it was at first merely an organ of enlightenment, an association occupying itself with certain material interests of the country, the members of the second period joined to that aim the conquests of fresh results, and those of the current epoch occupied themselves exclusively in extending the domain of science.

In reality, there was no contradiction in these different aims; they expressed only the idea, formed at different periods, of the influence of science on public prosperity. A hundred years ago it was thought that science could only operate upon the development of the material interests of the country, but now we know that science is merely useful because it develops the intellectual power of man—an advance which is a condition nearest to the development of agriculture, manufactures, and commerce.

Assigning a practical aim to the works of the Academy was not worthy of that body, nor beneficial to that which they proposed to do; and this error caused to be called in question for some time the utility of the institution. The labors of the academicians would necessarily lose their true and important signification with the mass of the population, because they estimate their value by the nature of the services they have rendered to the agriculturists and workmen of Bavaria. The special nature of the researches was not calculated to supply the particular wants of each. The perfecting of an implement, a receipt for improving the soil, the preparation of soap, a method of dyeing a stuff, or tanning of leather, would be useful to one manufacturer, agriculturist, soap-boiler, dyer, or tanner, but not to all who were engaged in the same trade. Dif-

ferent manufacturers would have different tools to perfect; one farmer would require a different manure from another; all soap-boilers do not make the same soap; a dyer would require one colour for silk, another for worsted. In fact, each tradesman has, for the improvement of his art, some special wants which vary indefinitely according to his experience or degree of competency.

A society of scientific men cannot undertake to answer the wants of each individual; their efforts must be directed in a manner that will benefit all classes. For instance, it cannot occupy itself in perfecting implements of the industrial routine; it must search out principles which will conduce to practice.

With this latter view, our Academy has taken considerable in the progress of mechanics, manufactures, and technical arts. If ever complaints are made against its utility, they should be directed, not against the academicians themselves, but against the manufacturers and technologists who refuse to take part in their labours. If they have not done it yet, or have done it in an imperfect manner, that arises from there existing no real union between practice and science.

In order that two men enter into an intellectual treaty with each other it is indispensable that one speaks the language of the other; but not long ago the practitioner resembled a slave, who can only comprehend the language of signs; for he only recognized as true and real that which was visible and comprehensible: progress could only reach him indirectly. The practical man challenges the scientific to erect a theory on that which his reason suffers him to comprehend, and despises as purely speculative and impracticable the conclusions and lessons of science. Practice and not theory, is with him the true professor. "How can men who do not know how to manage a plough tell us what fields require, to produce a good harvest? or how rain acts on the growth of fruit?" This was for a long time the language of the practitioner.

It must be admitted that in general a theory only, does harm to the practical man every time he tries to put it in use; the attempts that he hazards produce results opposed to those that he looks for. He does not even know that the use of a theory is not a gift natural to man, and that he should be taught it just the same as he would learn the use of a complicated instrument. He does not know that the legitimate use of a law for a given case supposes the intelligent comparison of all specific circumstances, and that intellectual work supposes a series of operations in which it has no guide. In order that a theory can be made of use to him, he must give it due reflection, discern its property, in fact learn to make an exact observation. The abyss between science and practice begins to be filled up successively, thanks to the wise princes who possessed the will and power to break down the obstacles which prevented

the development of the intelligence of the people, and who by improving the system of schools and other means of instruction have extended knowledge among all classes of the population; their names are intimately connected with all the improvements that the state of civilization and culture of the mind permitted to be accomplished; they have gained immortal honour untarnished by blood or tears. In every country prosperity, riches, morality, and real power increase with the amount of knowledge that the people acquire. Is it not, in fact, the extension of knowledge which destroys the prejudices proceeding from primitive ignorance and paralyzing the expansion of individual force? Is it not a deeper knowledge of things that gives us our laws, our inmost convictions, our customs, the commodities of civilized life, our arts, sciences, and manufactures?

The progress which has been made in schools, and other means of instruction, during the last fifteen years, is in reality greater than that of several preceding centuries. The education of the workman, manufacturer, technologist, merchant, the labourer, is no longer comprised, as formerly, of a lecture on writing and the four rules. Not only in our gymnastics and industrial schools are the faculties of the mind developed in such a manner, as that young men who leave them are fitted to accomplish the most complicated intellectual operations; but, further, it gives to the pupils a great amount of knowledge, by the help of which, without more attention, more order, or more activity than their fathers, they can undertake more difficult tasks, and perform them in a more satisfactory manner. In fact, this is the principal result of the education they receive—the young men learn to comprehend the language of science, and acquire in consequence the advantage of bringing to bear upon the wants of life and society, the discoveries which they make by its study.

It is worthy of remark that this improvement is universal in all spheres of society; in fact, the idea that a little of science is useful under all circumstances, even to the poor workman, is beginning to take root even in the minds of men who have had no occasion to follow the professed course in schools. We generally believe that some scientific knowledge of botany is useful to the gardener—that the baker, the soapboiler, the tanner, and the dyer, would feel, in the practice of their art, the want of possessing some knowledge of chemistry. One gardener is not worse than another because he comprehends better the life of plants; a baker is not the less useful because he knows the composition and properties of bread, the flour, salt, fermented dough, or yeast; a soapboiler will not be the less successful in his operations because he takes account of the character of the grease, the



pearlash, lime, and lye, because he knows the qualities that should be sought for in different substances, or has learned the signs by which they may be known. The simple inhabitant of a town or village knows himself that the science of his neighbor, the municipal counsellor, who possesses some knowledge of the principles, in virtue of which are determined the laws of the sanitary police, is truly beneficial to the community.

Surely, then, we may expect to gather in future much more important fruits from progress made by this opinion. Already sciences exercise a certain influence, to the profit of public prosperity (under restraint it is true, but increasing from day to day), over the system of arts and manufactures. Thanks to them, agriculture, as the illustrious founder of our academy has stated, will experience a revolution equally advantageous when it shall have recognized that the separation of agricultural colleges from other educational establishments of a general nature is an obstacle to intellectual progress; when it shall be admitted that the immediate cause of the general decadence and small success of these institutions is found to be the insufficient education, owing to the imperfect scientific instruction which is received in these schools, while they study there, at the same time, technical processes.

(Concluded in our next.)

### The Scottish Highlands.

A small volume has recently been published, on "*Management of Highland Landed Property*," by George G. Mackay, of Inverness. It consists mainly of a re-issue of several well written articles that appeared in the *Inverness Courier*. The writer displays an intimate acquaintance with the condition of landed property in the Highlands, and the hindrances to the development of its natural resources. A few extracts will be found generally interesting, particularly to those who hail from "the land of the mountain and the flood."—In reference to the recently much agitated questions of game and deer forests.

Mr. Mackay states—"We have said, and we confidently repeat, that farmers do not object to a fair stock of game, which it is conceded to be the undoubted right of every proprietor to preserve for his own benefit or enjoyment. Our forefathers could have no conception of what a modern game preserve consists. In those days game had merely a place in the equilibrium designed by the wisely ordained laws of nature, wherein the productiveness of every species is

uniformly in the inverse ratio to its powers of self-defence; and the stock of game was, so to speak, natural and moderate, holding the position designed for it by the decrees of an all-wise Providence—proportionate to its importance and value, but subservient to the interests and prosperity of other species, and above all those of man. By the hand of man, however, this equilibrium has been destroyed; and hence the evils complained of. May it not be deemed an excess of game when three or four hundred blackcocks are found by the farmer in his morning walk snugly set down on the top of his stooks. We have known instances in which, from their unceasing attentions in this way, a field that was estimated to yield 6 qrs. per acre only yielded two! Ay, we have seen portions of a field on which the stooks were so thoroughly lightened in this way, that the lucky owner was entirely saved from the labour of thrashing them! How shall we characterise the state of the game where, perhaps, in a large field of thoroughly enclosed turnips, a premium may be offered for the discovery of a single unbroken bulb; or where the farmer, in his homeward walk at dusk, is gratified with the sight of perhaps fifty hares in his promising braird? Is it to be wondered at that a rent payer should occasionally give vent to a little grumbling in such circumstances?"

If the farmers in the Highlands can solve the problem, What constitutes "a fair stock of game?" they are much wiser than their English brethren, who gave evidence before Mr. Bright's committee. Nothing is more condemnatory of game preservation than the above extract, which describes a state of matters not exceptional. The general system of the owners of lands in the Highlands is to obliterate all signs of ancient, as well as of advancing civilisation. Fashion is fostering a spirit of barbarism, the ultimate results of which appear to be that the Highlands of Scotland are ultimately to be rendered a comparative desert—the inhabitants and the domesticated animals being extirpated to make the country the domain of wild animals. Till the fact becomes more generally recognized that preservation of wild animals and high farming is incompatible, it is hopeless to expect the investment of capital, either in the reclamation of waste lands, or to lands already under the plough, so as to increase the agricultural products. Game and deer cannot be kept out of corn fields by any plan which has been adopted in the Highlands. With the extension of deer forests, the cultivator must recede, as well as the stock farmer. The onward march of the red deer is only to be stopped by the erection of a boundary fence more difficult to surmount than the Roman wall of Antoninus. [Mr. Mackay thus describes the result of the annually increasing extent of deer forests:—"Besides the loss of population, we incur the loss of a large quantity of the staple food of the people. Those exten-

sive tracts of land now under deer, formerly teemed with flocks and herds, which, after supplying the wants of the home population, were annually exported in great numbers to meet the demand of our manufacturing brethren in the south. To this extent, therefore, the nation becomes less supporting than it once was, and we must look elsewhere to meet the deficiency. The supplanters of these flocks—the deer—are, as is well known, no value in commercial point of view, so that there is no compensating supply in this way for the loss sustained. When a proprietor converts a large portion of his estate into a deer forest, instead of desiring to see increased traffic, and more of the stir and bustle of active business, as he would otherwise naturally do, he now seeks stagnation and stillness—he courts solitude and isolation, and aims at the reconversion of the country into the desolate hunting ground that it was a thousand years ago."

With such a system in operation, where are the chances of the improvement of the agricultural resources of the Highlands. Mr. Mackay states—"There are thousands, aye tens of thousands, of acres of waste ground throughout the Highlands, which, by the simple adoption of a judicious and enlightened policy, might be increased from twenty to forty fold in value in twenty-five years, at very little expense to the proprietor. This seems a startling statement; one apparently too good to be true. But is true, and we could adduce a hundred instances in proof of it. There are few farms, indeed, in the Highlands, to which there is not attached waste ground which might be profitably brought into cultivation. Yet there it remains, untouched and unprofitable in every respect, while the tenant would usually respond heartily to the offer of an advance by the proprietor for its reclamation. To the capitalist such improvement offers the highest possible inducement in the way of investment. The tenant will usually be found glad to pay 6 per cent. on the outlay; the proprietor has the best security for his money in the actual improvement of the soil, which he cannot possibly lose; so that such a safe and remunerative investment for money is rarely to be found. He reaps this interest for his money for the first nineteen years, and will derive from fifteen to twenty per cent. in perpetuity thereafter. And even where the proprietor has to borrow money for the purpose it will be seen that it is still his interest to improve. He can borrow from any of 'The Lands Improvements Companies,' at a certain rate of interest, to pay off principal and interest in twenty-five years. The tenant will be found willing to pay within, say one per cent. of the interest thus paid, and in many cases he will even pay the whole: so that the owner has his land converted from moor ground, worth perhaps a shilling an acre, without costing him anything but the trouble of negotiating the busi-

ness, or at the most at a cost to him of perhaps five pounds per acre."

And again—

"To what purpose are our millions of acres of improveable waste lands allowed to lie unproductive? It is said they are generally incapable of remunerative reclamation; and no doubt there are circumstances of soil, position, altitude, or climate, where such an assertion holds good. But we deny its applicability in general terms, so long as we see so many thousands of acres in our own locality now lying waste, which we know to be adapted to the raising of every species of cultivated crops. We can point out 20,000 acres of such land within twenty miles of Inverness, the so-called capital of the Highlands. Is this on account of an adverse climate? Are the waste lands not in the same climate with our present fruitful fields? Is it on account of their altitude? Have we not waving corn fields and a prosperous tenantry in the heights of Strathspey and Badenoch, in the brace of Urquhart, and in the very mountain gorges of the Monilia. And yet why are these more favoured lands not reclaimed? Not because they are not eminently adapted for cultivation—not because the people are unwilling to undertake the task (on the contrary, they are only too eager to do so,) but because the soil is not free. The entail laws so bind the hands of proprietors, that though they should have any disposition to improve, they cannot; neither can they treat with tenants on eligible terms; and, moreover they cannot sell their land to others who would improve them. The repeal of this law is one of the palpable modes by which it is in the power of the Legislature to advance, especially the Highlands of Scotland in which the evil effects of the law have been very severely felt. Tens of thousands of acres might thus pass into the hands of capitalists of every calibre. We might have our reclaimable moors sold out to industrious farmers in lots, as is now done in the forests of Canada. And if this were done, the grand climax of the emigrant's ambition—the goal to which he aspires, and which is the most attractive motive in inducing him to emigrate, viz., the possession of a piece of land of his own, on which he might labour and expend all his energies, with the satisfaction of leaving a certain patrimony to his family—this, we say, would be attainable at home as easily, and with as great a prospect of satisfaction, as it would be in Canada, or in any other country."

The author proceeds to state that in Canada the capital required to purchase and clear an acre of ground is equal to the fee simple of much of the reclaimable waste lands in Scotland. This may be correct in particular instances, but comparing the wild lands of the two countries, as a whole, for agricultural purposes, those of Canada are unquestionably very superior in point



of permanent money value and productiveness to the bleak and inhospitable elevations of the Scottish Highlands. No doubt but several of the wastes of the old country are susceptible of profitable improvement, but *in general* the same amount of capital and labour bestowed on the naturally rich level lands of Canada would, in the long run, be attended by much larger profits. The generally prosperous condition of our Scottish settlers is a sufficient proof of the correctness of this observation.

To effect an entire change in the present state of the Highlands, Mr. Mackay suggests several conditions, all more or less important aids for ultimate success. The abolition of the laws of Entail, increased facilities for the transfer of land, and the encouragement of railways by Government, partly by pecuniary aid, and also by ignoring and repudiating all exorbitant claims of damages by individual proprietors and corporate bodies, remarking that, "It is too bad that railway companies should in these days be under the necessity of buying up the good will of every small proprietor who may on the most trivial pretence threaten opposition. If Parliament ceased to listen to such claims, railway companies would not have to fear their opposition, and would be saved those heavy 'douceurs' which so cripple the resources and swallow up the rightful dividends of the undertakings. Parliament listens to these absurd claims, and to this fact we are further indebted for the expensive deviations from the simplest line which we so often see. If two lines are equally easy of construction, or nearly so, it is, of course, the duty of a railway company to select that which may be least offensive to the taste or prejudice of the proprietor through whose land the line passes. But it is surely unfair, on the other hand, that the necessities of the public should be kept in subordination to the caprice or whim of anybody who chooses to put himself in their way.

"In the Highlands especially, railways are a benefit to all classes, and to none so much as to the landowners through whose property the lines pass; so that the very mention of damages seems ridiculous, when the advantages are so great and so self evident. Such are the benefits resulting to the landed interest from railway communication, that instead of anticipating claims for damages, on the score of affecting the amenity of residences, or the revenue of ordinary road-trusts, and such like, we might rather expect the landholders to come forward, offering their lands, free of all charge, to any company who would undertake to supply them with such a boon as a railway. The grounds on which these claims for compensation are made are so utterly untenable that we only wonder that they have ever been given effect to.

"We heard not long ago of a proprietor exacting damages on account of having the amenity of his residence disturbed by the passing of a railway on the opposite side of a broad navigable river! The Inverness and Aberdeen Junction Railway, on equally good grounds, has had to pay heavily for anticipated damage to the trade and revenue of the Findhorn Bridge! And why has it not to compensate the steamboat companies along the coast for the presumed loss of traffic they will sustain? Why are not all the common carriers along the road compensated for their loss? Are there not vested interests at stake in these cases as well as in the other? It will be difficult to define the limit to which the principle, when admitted at all, is to be confined."

### Are the Long-Woolled Sheep of Tweedside Pure Leicester's?

By JOHN WILSON, EDINGTON MAINS, BERWICK-SHIRE.

Happening a short time ago to meet with an acquaintance who is a breeder of Leicester sheep, our conversation turned upon the discussions which had taken place last year, first at Kelso and afterwards in Edinburgh, upon the proposal which had been made to have in future two distinct classes of Leicester sheep at the Shows of the Highland Society. This naturally enough led to the question which I have placed at the top of the communication. As the gentleman referred to seemed much interested by some facts which I then adduced in support of the affirmative of this question, and expressed the opinion that they would be equally interesting to many others, I am induced to give them publicity.

All who take an interest in this question are aware that the proposal referred to above was made with the view of obviating the very great dissatisfaction which has again and again been produced by the way in which the premiums for Leicester sheep have been awarded at the Shows of the Highland and Agricultural Society of Scotland. The Directors of that Society, with the laudable motive of avoiding partiality, or even the appearance of it, have usually endeavoured to procure judges wholly unconnected with the district in which their Show is held, and have frequently obtained a portion of them from the midland counties of England. When the latter class of judges have been a majority, as at the last Show at Berwick, they have with perfect consistency awarded the prizes in every instance either to sheep from the south, or failing these, to such as approached the nearest to the English type. And so it has happened that the Border sheep, although constituting the vast majority in point of numbers, have been entirely ignored, and the prizes have been given to animals which, in the opinion of, near-

ly every spectator, were utterly inferior to all the better specimens of those which had been passed over. In such cases the third judge, being usually a north country breeder, has been placed in the disagreeable position of having to dissent from his colleagues at every decision and had better not have been there at all. At Perth last year the case was reversed: as two of the judges were Scotch and one Irish. The latter, having been used to sheep of the English type, could only look on and see his colleagues award the prizes quite contrary to his judgment. I do not see how the Directors could have come to any other decision than that which they adopted, viz., to deal with all Leicester sheep as constituting one breed. At the same time I am fully persuaded that their premiums will never be awarded in a way that will secure the confidence of the members of the Society, unless the decisions are made by men who at least recognize the genuineness of the Border sheep, and their eligibility to carry prizes when of sufficient merit. Now, it is well known that this is not the case with breeders from the midland counties of England, who for the most part, have no scruple in expressing the opinion that our Border sheep are not Leicesters at all. And our south country neighbours, while refusing to call our sheep *Leicesters*, have provided another name for them. In most of the reports of the recent show at Leeds, notice was taken of an experiment then in progress on the farm where the steam-ploughs were tried, for the purpose of testing the comparative merits of a number of different breeds of sheep, amongst which was enumerated the *Barnshire* breed. Again, in the prize report on the farming of Yorkshire, in the 22nd volume of the "Journal of the Royal Agricultural Society of England," p. 122, the author speaks more than once of the *Barnshire* breed of sheep. Now, I daresay, many persons, in reading these reports, must have been puzzled as to the locality of this *Barn* or *Barnshire*, and may have felt some curiosity to know what kind of sheep was referred to. The explanation is just this: A fair for the sale of draft-ewes has for a long time been held annually, in the month of September, near Wootter, in Northumberland, which, from the day in the calendar on which it takes place, is known as St. Ninian's, or, in northern dialect, St. Rignan's fair. The site of this fair lying in the part of Northumberland which in the olden time was called Bamboroughshire, the graziers and dealers from Yorkshire, by whom these ewes used to be bought, got into the way of calling their purchases "Bamboroughshire sheep," which for handiness was shortened into *Bampshire*, and has now as we have seen, got varied into *Barnshire* and *Barnshire*. The fair just referred to has now greatly declined from its former importance in consequence of the annual drafts of ewes from the innumerable flocks of Northumberland, Merse, and Teviotdale being

bought up at home, or at local markets, by dealers who convey them by rail to the great markets annually held at York, Harwood, &c. Forty years ago the sheep bred in the districts just referred to were exclusively Leicesters, and it was to these that the name Bampshire was first applied. About that date, however, many of our farmers began to try a cross betwixt Cheviot ewes and Leicester rams, and these two breeds were found to blend so readily, not only in a first cross, but also with a continued use of the pure Leicester ram and the cross-bred ewes for successive descents, and to produce so useful an animal, at once hardy, prolific, of good size, with great aptitude to fatten, and excellent quality both of wool and mutton, that this mixed breed rapidly superseded the pure Leicester, *except in the case of ram breeding flocks*. I may here notice that in the Border districts a pure Leicester is invariably called a *bred* sheep *par excellence*. Sheep of the first and second cross betwixt Leicester and Cheviot are in like manner *halfbred*, or two-parts *bred*, as the case may be; but when they are the produce of a pure Leicester ram and ewe of the mixed breed of three or four or more descents, I suspect that, when taken south, the old name of Bampshire is often applied indiscriminately to them as well as the pure Leicesters. The latter, as I have said, are now found only in the hands of regular ram breeders; but that their flocks are still comparatively numerous, may be inferred from the fact that, at the ram fair now annually held at Kelso in the month of September, from 1,600 to 2,000 shearing Leicester rams are presented for sale, and are most of them bred in the surrounding districts.

And now again for the question: Are these rams really pure Leicesters? They certainly differ much in appearance from the type of sheep now found in the midland counties of England. They are stronger in the bone, larger in frame, have white faces and legs, and are altogether of a more robust form than their modern English kindred. Are these diversities, then, due to crossing, or are they entirely owing to selection, and the influences of climate? Now, without claiming absolute purity for every flock, I do believe that those of the best breeders on the Borders can establish as direct and pure a descent from Bakewell's flock as any now to be found elsewhere. Let us inquire when, and by whom, the Leicester breed was first introduced to the Borders. It is well known that this was largely due to the Messrs. Culley, who in 1767, migrated from the county Durham to Tweedside, and brought with them excellent breeds of live stock, and in particular a flock of sheep of the pure Leicester, or *Dishley* breed, as they were then called. Mr. George Culley was the personal friend of Bakewell, and the author of a treatise on live stock, in which his description of the Dishley breed of sheep quite corroborates the opinion which it is my present object to



substantiate. Another person who took a leading part in introducing the new breed was the late Mr. Robert Thomson, of Lilburn, and afterwards of Chillingham Barns in Northumberland, who in his youth resided for some time with Bakewell as his pupil, and whose flock, long known as one of the best on the Borders, was bred directly from Bakewell's. I cannot, of course, speak of the flocks of the breeders now named from personal observation, as they had all either died or retired from business by the time I began; but I inherited from my father a flock of Leicesters which had been bred chiefly from their flocks, and I have thus been familiar from my earliest years with the style of sheep which they introduced. About thirty-five years ago, and for many subsequent years, there existed a small flock of Leicesters, the property of Mr. Luke Scott, formerly tenant of Easington Grange, near Belford, which I knew well, and which, in several respects, may be said to have been unique. Mr. Scott, although a steady and upright man, had not prospered in business. From ever I knew him he had no farm of his own, and his little flock, numbering some twenty ewes and their produce, to which he clung with fond affection and almost desperate tenacity, was boarded out, sometimes in one place and sometimes in another, often exposed to great straits, and never enjoying anything like fair treatment. He has often told me that the foundation of this flock was laid by the purchase of a few shearing ewes from a Mr. Yellowly, then in good repute as a breeder of pure Leicesters. As long as Mr. Robert Thomson continued a breeder, Mr. Scott had used only rams, or their progeny, of his own breeding; and for the 20 or 25 years which elapsed betwixt Mr. Robert Thomson's retirement from business and the final breaking up of Mr. Scott's little flock, the latter was maintained entirely by the use of his own rams. So jealously did this exclusive old man watch over the purity of his idolised little flock, that I recollect of his telling me how a favourite ewe had made her escape from the enclosure in which she was confined, and had got access to a ram of a neighbouring flock. Most persons would have thought it enough in such circumstances to have sold or destroyed the progeny of this *mesalliance*; but so irremediably did the old man consider his ewe to have been contaminated, that favourite as she was, he caused her instantly to be slaughtered. Mr. Scott let out on hire as many of his rams as he could, but never sold either male or female except to be slaughtered. And what, then, were the characteristics of this interesting little flock, separated from Bakewell's by but one intermediate link? Their faces and legs were invariably white—as much so as any Cheviot's. Their wool formed a close-set, compact fleece, inclining to coarseness in the breech, and often scanty, or altogether awanting, on the belly. The rams carried their heads well up, being

strong and full in the neck-vein, and remarkably wide in the chest. They were particularly clean in the legs, and seldom suffered from foot-lameness. They were vigorous and active, and in token of this were pugnacious to a fault, being more troublesome in this respect than the rams of any breed of sheep I have ever had to do with. Owing to their own purity of breeding they possessed in a remarkable degree the capacity of imparting their own characteristics to every flock into which they were introduced. Mr. Scott never had many of our ram breeders as direct customers, as they objected to the comparative want of size of his sheep; but I have the best means of knowing that most of them freely availed themselves of his blood by hiring rams from those who did deal with him directly. So much was this the case, that there is probably no Leicester flock on the borders, of any considerable reputation, that has not this blood largely in it. The comparative want of size, to which I have just referred, always appeared to me to be less an inherent quality than the inevitable consequence of long continued hardships. I have thus shown that we got the genuine Bakewell blood to begin with, and that, in one instance at least, it was preserved amongst us, until a very recent date, in a degree of purity not equalled anywhere else, unless, perhaps, in Mr. Valentine's flock. Let me not, however, be misunderstood as if I wished to convey the impression that the breeders whom I have named were the only persons on Tweedside who were direct introducers of Bakewell's blood. There were many others whom I cannot enumerate. I may mention, however as being Berwickshire breeders, the late William Robertson, Esq., of Ladykirk, and his tenant and intimate friend the late James Thomson, Bogend, who both, down to a yet recent date, went annually to Leicestershire and hired rams from the best flocks there. Mr. Robertson's flock of about eight hundred ewes dispersed in consequence of his death about 1830, and is still represented in the district. Mr. Thomson's remains intact in the hands of his grandson at Mungo's walls, and is still used as a ram-breeding flock.

Much as the Leicester sheep of the south and of the Borders now differ from each other, I believe that both can equally claim and prove direct descent from Bakewell's flock. Diversity of climate and general treatment, and diversity of taste in the breeders, have for a prolonged period been at work to produce the change; and these are influences potent enough to account for all the change which has actually taken place, although both started with like materials. Bakewell, we know, had just the common long-woolled sheep of his day to work upon; and he by skill and perseverance, so changed them as to originate what has ever since been recognised as a distinct breed. The materials which proved so plastic in his skilful hands are still as susceptible of modi-

fication as ever they were. As a matter of fact, not our sheep only, but all our domesticated animals are constantly varying. It is not only the flocks of widely remote districts that exhibit this variation; it can be seen any day, and everywhere, by comparing together any given number of flocks in the same neighbourhood, each of which will be found to have well-marked family features, by which it can be readily discriminated from the others.

The point of real practical importance is, that everywhere the Leicester breed retains the qualities which from the first made it so valuable. It is true that it is not now put to the same use as formerly. It no longer yields directly our staple supplies of butcher meat; but crosses betwixt it and the Downs in the south, and betwixt it and the Cheviots and Blackfaces in the north, now constitute the main supplies to all our markets.

January, 1862.

Before publishing the foregoing statements, it occurred to me that it would be well to submit them to two gentlemen who I knew to be well qualified to judge of their accuracy—viz., John Gray, Esq., of Dilston, and Thomas Scott, Esq., late of Beal. It is with peculiar gratification that I append the following excerpts from the letters with which they favoured me on returning my manuscript. Mr. Gray says:—

"I have been favoured by reading your paper on the genuineness of the Border Leicester, and, as I am going from home in the morning, I give you, at a late hour, a hasty line, to say how entirely my opinion concurs with your own as to the still existing purity of the *ram-breeding* flocks in the Border countries \* \*

I quite agree with all you say of George Culley and Robert Thomson, first at Lilburn (when the first sale of auction in the North of a pure-bred Bakewell flock took place) and next at Chillingham Barns, where he had annual lettings, at which I took rams, and learned my first lessons in the symmetry and quality of the pure Leicester. I well remember also his sale of all his flock there in May, 1814, when I was, though young, one of the judges, and presided at the dinner in a barn full and overflowing. I regularly attended the public lettings at Mr. Culley's too, and hired rams, very often. Those two flocks were certainly pure Leicester, if Bakewell's were pure—and we can go no farther back. But then there were two families in Bakewell's flock, distinguished as *blue caps* and *red legs*, which came out at times in their descendants. You must have seen and known a kind of Leicester with blue faces, generally bare on the scalp, and red when lambed, and when mature, easily broken by flies, on which account they were not favourites with the shepherds. They were good feeders, but light of wool. The red or brown legs were a hardier tribe, and good in carcass also. I remember one of the

best rams I ever had being one of that kind—hired at sixty guineas from Mr. Thomson (descended from Bakewell's). That class of sheep was then used and approved by Messrs. Jobson of Turvilaws, Vardy of Fenton, Smith of Norham, Smith of Hayfarm, &c., &c., and continued in those families until within the last twenty years. So long as a sheep-flock was kept at Millfield Hill no alloy or impure cross was ever admitted; but yet the character of the sheep was rather altered to suit the taste of those who hired my rams. The original breed was from Thomson's and Culley's, my father having bought gimmer's from Thomson at an early time. By way of change, I hired sheep from Burgess, and then I had three for two years from Lord Althorp, got by Buckley's best ram, called Big B., which his Lordship had for two seasons. Those sheep were perfect as to shape and quality, but on a low leg, with a round full carcass, fulfilling Bakewell's toast, 'small in size, and great in value.' If I had fed all my sheep to the end for the fat market none could have paid better than those for early maturity and the amount of mutton produced per acre, although not in large frames; but in that neighbourhood all the ewes are sold for breeding another year in Yorkshire, and the buyers like them to stand on a higher leg, and make a bigger, if not better, show in the pens of York and Wakefield: and so also with dimmons sold in the autumn to be fed in the South. Chiefly on this account, and partly because more farmers reckon more by the price they get *per head* than by the *aggregate amount* of mutton and wool in sheep of smaller size, I was induced to follow the public taste and to cultivate a large-sized sheep, but without sacrificing purity of blood. The taste prevailed, I think, pretty generally on the Borders, and has wrought, together with the effects of climate, in changing considerably the look and character of the Leicester sheep in those parts from that of the original Leicester sheep of that county and Warwickshire, &c. I have seen most marked changes produced by local circumstances on Leicester sheep. I once bought some shearling rams in this county for a friend in Ireland. I saw the sheep in Queen's County three years after and could hardly believe them to be the same, so coarse were they in wool, and so changed in character. \* \* \* You are quite right as to the origin of the name Barn, or Barnshire sheep. I remember old Green, a large buyer from Yorkshire in the beginning of this century, who always used that term in speaking of the draft ewes he bought in Bam-boroughshire and Glendale. Your account of old Luke Scott's little flock is very curious and strictly true. I knew him at Easington, and used to meet him at the shows at Chillingham Barns. The last of his diminished flock was at a poor place by the road south of Wooler, called Plea Place, where his son once asked me to stop and look at the sheep which he thought



combined in perfection what I had described at some meeting as the true qualities of the pure Leicester. \* \* \*. The flocks of Ladykirk and Bogend were purely Leicester to the end, if Leicestershire rams hired at good prices were pure. I had the privilege of being well acquainted with both Mr. Robertson and Mr. Thomson, who for many years used to have their horses rested with me in passing Millfield Hill, so that I might have a view of the rams. But even in these there was as great a difference between those from Stone, Stabbins, Burgess, and Buckley, as now exists between those of Nottinghamshire and Northumberland."

Mr. Scott says :—

"Your remarks are in perfect accordance with my recollection of the conversation which I have heard upon the subject by my seniors. There is nothing I could add of my knowledge to the very full history you have given of the breed in this district."—*Journal of Agriculture*.

### Sewage Irrigation.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S

The use of the sewage of towns in irrigating grass lands is now exciting that attention which its public importance demands. A royal commission and a Committee of the House of Commons have been appointed, with full power to institute experiments, and to examine witnesses. That Parliamentary Committee has recently published its first report, and from that we may readily learn how correct are the general conclusions of the farmer, and how absurd have been the reasons of those who have systematically decried the importance of these fertilizing streams.

It may be very true that the experiments given in evidence before the Committee were not always made with the requisite care; that the amount of sewage applied was often far too small, and at too distant intervals; but still, after allowing every necessary drawback, there yet remains in that report a very considerable amount of facts well worthy of my readers careful consideration.

In this inquiry the amount of sewage needed to produce the most profitable result is indeed the primary question. Now, in the great sewage irrigation operations so long successfully carried on at Milan, and at Edinburgh, the quantity annually applied per acre appears to be about 5,000 tons. In Northern Italy, where five or six crops of grass are annually produced by the irrigation of the meadows near Milan, with the river water, into which the city sewage is discharged, an annual charge is made for the use of the water. It appears from the report of Mr. Smith upon Italian Irrigation, that the price paid annually for the irrigation water is.... 5s. 9d.

That during the summer season the meadows are watered..... 18 times.  
That the weight of water applied per acre each time is about..... 230 tons.  
That the annual produce per acre of

grass is about.....,..... 224 cwt.  
That this is about the most beneficial amount of liquid to apply per acre accords with what I had long since occasion to remark. It was after examining the amount of water required to saturate thirteen kinds of soil that I was led to conclude that if we calculate the mean amount of water in these thirteen varieties of saturated soils to be equal to 42lbs. per cubic foot of earth, or 378lbs. per square yard of soil a foot deep, then  $378 \times 4840$  (the number of square yards in an acre) gives 1,829,520lbs. of water needed to saturate an acre of perfectly dry land to the depth of one foot, or about 816 tons. If we suppose that the saturation of the soil need only extend to a depth of nine inches, then about 543 tons of water would be sufficient; if a depth of only six inches, then 408 tons; and if only a depth of four inches, then 273 tons would suffice. It appears from the report of Dr. J. Stark, that the celebrated Craigentinny Meads, near Edinburgh, are annually irrigated by the city sewage about eighteen times. For instance, a certain plot was watered in its turn, May 3 and 14, June 3 and 20, Aug. 15 and 31, Oct. 8 and 29, Nov. 24, Dec. 31; in 1845, Jan 30, Feb. 18, March 5 and 22, April 2 and 13. Now, if we calculate that, on an average of months, 250 tons of irrigation water would suffice to saturate the soil (always partially and sometimes thoroughly previously moistened), then it would require 4,700 tons of water to give these eighteen irrigations to an acre of land. I deem the quantities I have stated as likely to be an average amount of sewage fluid required for the irrigation of an acre of grass land to be nearly correct. In the report of Mr. George Buchanan, engineer for the irrigated meads of Craigentinny, near Edinburgh, he states the quantity of water necessary per acre to be equal to a stream of sewer fluid of  $3\frac{1}{2}$  cubic feet per minute for 12 days of 10 hours each, or about 650 tons. It will be remarked, however, that the sewage fluid in this case had to sustain the soakage, leakage, and evaporation during thirteen days of the month of May. This slow irrigation is far from being the most economical mode of applying the sewage—the more rapid and copious application being to be preferred, as affording little time for the soakage of the substratum, and the leakage from the soil into the drains, and evaporation from the surface. Mr. Buchanan also adds, "In some parts the soil consists of very stiff clay, resting on a similar substratum, and other parts of a red sand, and the sand requires nearly twice as much water for saturation as the clay." We see, then, that the amount stated by Mr. Buchanan of about 700 tons per acre having been

used at Edinburgh upon a mead, and subject to many deductions from its saturating power, is not very widely different from the average amount of about 800 tons required, according to Professor Schubler, to saturate the same extent of nearly chemically dry, earths. Then, again, by avoiding the soakage and drainage waste of twelve days, and taking the average rate of moderately retentive soils, a very material saving would doubtless be accomplished; and, moreover, by raising the sewage fluid to the contemplated elevations, it would be available, as at Edinburgh, for the use of the irrigation a second time. The use of sewage waters a second time in irrigation, is an old-established practice in Italy. In the celebrated meads of the neighborhood of Milan, "the water of the draining channel," says Count Arrivabene, "is collected into another channel, which conducts it to irrigate another meadow in a similar manner. Upon the whole, therefore, I am inclined to think that the calculated quantity of 4700 tons per acre annually is a tolerable approximation to the truth."

In the experiments instituted at Rugby by the members of the Royal Commission the amount applied per acre has been in these experiments 3,000 tons, 6,000 tons, and 9,000 tons per annum. In these trials two material objects were hoped to be attained, viz.—1. To ascertain the amount of increase of produce from the application of different proportions of sewage to grass. 2. The most beneficial mode of using the grass produced, whether for milch cows or for fattening stock, given either by itself or with other food. These experiments were attended with very valuable results, although they were conducted under considerable difficulties, and the amount of sewage available was considerably less than was intended. The following results are given in the words and figures of the report:—

Two fields were employed in these experiments, viz., one of five acres, the produce of which was intended to be devoted to the feeding of oxen, to which the sewage was in these trials first applied on the 6th March, 1860; and one field of ten acres, to which the sewage was not conducted until the 1st of April. The chief results obtained were, that in the five-acre field the produce of grass obtained from four plots was as follows:—

|                                                                                        | Tons. Cwt. |    |
|----------------------------------------------------------------------------------------|------------|----|
| 1. Plot not dressed with sewage produced in two cuttings, of green grass per acre..... | 9          | 53 |
| 2. Plot dressed with 3000 tons of sewage per acre, in four cuttings                    | 14         | 16 |
| 3. Plot with 6,000 tons, in four cuttings.....                                         | 27         | 1  |
| 4. Plot with 9,000 tons, in four cuttings.....                                         | 32         | 17 |
| In half of the ten-acre field—                                                         | Tons. Cwt. |    |

|                                                                     |    |    |
|---------------------------------------------------------------------|----|----|
| 1. Plot, soil undressed, produced in two cuttings.....              | 8  | 18 |
| 2. Plot dressed with 3000 tons per acre produced in four cuttings.. | 15 | 16 |
| 3. Plot dressed with 6,000 tons in four cuttings produced.....      | 22 | 15 |
| 4. Plot dressed with 9,000 tons, in four cuttings.....              | 26 | 13 |

So that the increase of grass from the application of every 1,000 tons of sewage was, on an average, between three or four tons per acre.

In the experiment made with the grass in fattening cattle ten Hereford oxen were employed. They consumed, during sixteen weeks, per head daily 105½ lbs of the grass; so that the grass of each acre was sufficient to keep an ox, from

|                                         | Weeks. |
|-----------------------------------------|--------|
| The soil simple.....                    | 32.9   |
| The soil with 3,000 tons of sewage..... | 45.    |
| The soil with 6000 tons.....            | 82.1   |
| The soil with 9000 tons.....            | 99.7   |

The value of the increase of the oxen in live weight per acre, at 4d. per lb., was as follows:

|                            | £ | s. | d. |
|----------------------------|---|----|----|
| Grass from soil simple.... | 1 | 8  | 11 |
| Ditto 3,000 tons.....      | 2 | 4  | 3  |
| Ditto 6000 tons....        | 4 | 0  | 9  |
| Ditto 9000 tons....        | 4 | 18 | 0  |

So that the value of the live weight from the increased produce of 1,000 tons of sewage was, from the grass land dressed with

|                          | s. | d. |
|--------------------------|----|----|
| 3,000 tons per acre..... | 8  | 2  |
| 6,000 tons ditto .....   | 10 | 10 |
| 9,000 tons ditto .....   | 10 | 3  |

In the trials with milch cows, twelve were selected, and fed upon grass alone for sixteen weeks. Two cows were fed on the grass from Plot 1, which had not any sewage, and ten cows with the grass from the sewaged plots 2, 3, and 4.

|                                                                                                     |           |
|-----------------------------------------------------------------------------------------------------|-----------|
| They consumed daily per head of grass from the plot without sewage....                              | 138.7lbs. |
| From the sewaged plots.....                                                                         | 125.9lbs. |
| The average daily yield of milk per head from the cows fed with grass grown without sewage was..... | 25.05lbs. |
| From those fed with the sewaged grass                                                               | 20.53lbs. |
|                                                                                                     | Weeks.    |

|                                                                                    |          |
|------------------------------------------------------------------------------------|----------|
| The number of weeks the grass grown without sewage would keep a cow per acre ..... | 20.6     |
| The grass from the land which had 3000 tons of sewage per acre....                 | 40.3     |
| From that which had 6,000 tons per acre                                            | 57.9     |
| From that which had 9,000 tons per acre                                            | 67.9     |
| The gallons of milk each acre would yield was from                                 | Gallons. |
| The grass without sewage.....                                                      | 350.7    |
| The acre with 3,000 tons of sewage                                                 | 562.3    |
| The acre with 6,000 tons.....                                                      | 807.8    |
| The acre with 9,000 tons.....                                                      | 947.4    |



The value of the produce of the milk from each acre was,

|                                                      | £  | s. | d. |
|------------------------------------------------------|----|----|----|
| From grass without sewage, at 1s. 6d per gallon..... | 11 | 13 | 10 |
| The 3,000 tons of sewage grass....                   | 18 | 14 | 10 |
| The 6,000 tons of sewage grass....                   | 26 | 18 | 7  |
| The 9,000 tons of sewage grass....                   | 31 | 11 | 7  |

The increased value of the milk from the application of each 1,000 tons of sewage to the grass was therefore about £4 12s.

As some doubt had been entertained as to the comparative value of the milk from the cows fed with the grass produced with and without sewage, the composition of 100 parts of the milk from the cows fed on the grass from the unsewaged and the sewaged grass was ascertained by Professor Way. He analyzed nine samples of each. The mean of these was as follows :

|                        | Unsewaged. | Sewaged. |
|------------------------|------------|----------|
| Casein, or cheese..... | 3.246      | 3.241    |
| Bu ter.....            | 3.604      | 3.430    |
| Sugar of milk, &c..... | 4.505      | 4.218    |
| Mineral matter.....    | 0.753      | 0.776    |
| Totalsolid matter...   | 12.008     | 11.665   |
| Water.....             | 87.992     | 88.335   |

100 100

From these analyses we may conclude that the composition of the milk is but slightly influenced by feeding the cows with the sewage-irrigated grass. The results of the analyses of the sewage of a country town like Rugby will not be without interest to my readers. Twenty-six samples of this sewage when analyzed gave the following mean result per gallon:

|                                   | Grains |
|-----------------------------------|--------|
| Organic matter in solution.....   | 10.35  |
| “ in suspension.....              | 15.22  |
| Inorganic matter in solution..... | 37.22  |
| “ in suspension.....              | 15.25  |
| Ammonia in solution.....          | 5.27   |
| “ in suspension.....              | 1.50   |
| Potass.....                       | 1.04   |
| Phosphoric acid.....              | 0.93   |

So that each 1,000 tons of such sewage convey on to the land, in solution and in suspension—

|                       | lbs.  |
|-----------------------|-------|
| Organic matter.....   | 818   |
| Inorganic matter..... | 1,679 |
| Ammonia.....          | 217   |
| Potass.....           | 33    |
| Phosphoric acid.....  | 30    |

In almost all the investigations into the agricultural value of sewage which have hitherto been made too little attention has been paid to the value of the mere water of the liquid. In the experiments carried on at Rugby, the water bestowed upon the grass in the sewage was equal to a rainfall of about 30, 60, and 90 inches per annum. Now, if this large amount of liquid had been only rain water, the increased produce of grass would have been very considerable.

The weight of grass produced in the east of England moistened by an annual rainfall of 20 inches, is, we all know, very inferior to that yielded by similar soils on the western part of the island supplied with a rainfall of 40 inches, and vastly inferior to the produce of the meads of the chalk formation annually watered with at least 50 inches of the bright waters as pure as when they issue from the chalk.

Then, again, it is not merely the amount of the organic and other matters conveyed into the grass which should be valued, but their thorough diffusion in the soil, and the state of solution in which they come in contact with the roots of the plant, is also a very material element in the case. The amount of guano which the Peruvian cultivators sprinkle over their fields is said to be very small in amount, but then they always irrigate the land as soon as the guano is spread. Every English farmer is aware how much more valuable is the effect of this manure, when he employs it in heavy rains; for its valuable portions are then dissolved in the rain water, and diffused through the soil. Irrigating with sewage accomplishes a similar object with far more certainty.

In the case then of lands so situated that the sewage can be conducted on to them by its own gravity, the importance of its employment in irrigation need hardly be advocated. In those many situations where the outfall of town sewers is too low for the sewage to be thus conveyed on to the land, recourse must be had to the steam engine and the pump. Now, supposing it is necessary to raise such a considerable amount of sewage from a lower level to the surface of the soil, then the following observations as to the consumption of fuel required to raise water to various heights may be useful: for these I am indebted to Messrs. Ransome and Sims, of Ipswich. The greatest effect in pumping water is found in the Cornish pumping engines: now, the average of these fire engines, reported in June, 1851 (being twenty-five engines) is 62,000,000 lbs. of water raised one foot high by the consumption of 1 cwt. of coals. These engines are very large, the steam is used expansively, and condensed, and every appliance adapted to economise fuel. Probably we shall not be far from an average, if we estimate that the small engines used for agricultural purposes will not perform more than one fourth of this “duty,” or say, 16,000,000 lbs. of water raised one foot high by the use of 1 cwt. of coals. It must be understood that the same weight of coal will lift half the water to twice the height, or one-fourth the water to four times the height, and so on. Now, supposing that we have to lift the water from a stream to the portion of a field which is ten feet above the level of the river, then 1 cwt. of coal will lift to that height one-tenth of 16,000,000 lbs. of water, or 1,600,000 lbs. A gallon of water weighs 10 lbs., and

therefore 160,000 gallons will be lifted, or, as 224 gallons weigh a ton, 714 tons of water may be raised 10 feet with the consumption of only 1 cwt. of coal: and this is almost exactly equal to an inch in depth over seven acres, or an average fortnight's rain in the southern and midland counties of England.

The subjoined table gives the gallons of water which may be lifted to various heights by the consumption of 112 lbs. of coal; the pumping apparatus being good, and adapted to the power of the engine, the calculation being based upon the preceding datum of 1,600,000 lbs.

|                                         | Gallons.  |
|-----------------------------------------|-----------|
| One cwt. of coal then will raise 1 foot | 1,600,000 |
| " " 2 feet                              | 800,000   |
| " " 3 feet                              | 533,000   |
| " " 4 feet                              | 400,000   |
| " " 5 feet                              | 320,000   |
| " " 6 feet                              | 266,666   |
| " " 7 feet                              | 228,571   |
| " " 8 feet                              | 200,000   |
| " " 9 feet                              | 177,777   |
| " " 10 feet                             | 160,000   |
| " " 11 feet                             | 145,454   |
| " " 12 feet                             | 133,333   |
| " " 13 feet                             | 123,076   |
| " " 14 feet                             | 114,444   |
| " " 15 feet                             | 106,666   |
| " " 16 feet                             | 100,000   |

The use of sewage in irrigation, as I long since ventured to predict, will, there is little doubt, be chiefly confined to grass lands. Of this opinion is Professor Voelcker, who on this subject recently addressed the members of the Royal Agricultural Society. In most of the conclusions to which he arrives I heartily concur, and in none more so than when in the course of his able lecture he had occasion to inquire why it is that grass is especially benefited by the sewage of towns. It is so, he added, because it is a quick-growing crop, which allows us to apply a fresh quantity of fertilising matter as soon as a given quantity is exhausted. We can repeatedly manure the grass crop, but we cannot the cereal crop. We should never get our wheat ripened if, after it has passed through its grassy condition, and arrived to some extent at maturity—we should never get the grain formed, if we were to apply sewage to it. Neither can we well apply sewage to market produce; at least not on most soils; for sewage has a tendency to close up the pores of the soil, and to enrust it, which is a great practical inconvenience. We should also remember that we must dispose of the sewage of a town at all times of the year, and that we must therefore apply it in very large quantities at a time. Now, to grass lands we can apply very large quantities, because grasses grow very rapidly, and enable us to give a fresh dressing or a large dose of manure.

Upon the importance of these scientific researches I need hardly remark. The intelligent

readers of this widely circulating magazine are well aware that in working out the great problem as to the best disposal of the sewage of towns, two noble objects are to be attained—1st, the improvement of the public health; and 2ndly, the increased fertility of our cultivated soils. The experiments to which I have drawn the reader's attention will materially tend to promote these great objects, for they will enable the cultivator to proceed on safer, because still better understood ground. Of one conclusion I am quite certain—that if the course of the streams of sewage, now commonly worse than wasted, are only so altered as to be available to the skilful agriculturists of our country, they will need no arguments to induce them to turn those now noxious streams to a nationally important purpose.—*Farmer's Magazine.*

### Sir Edward Bulwer Lytton on Agriculture.

Sir Edward Bulwer Lytton was present at the dinner of the Herts Agricultural Association, and responded to the toast of the county members. The right hon. baronet adverted to the remarkable progress which had been made in farming, and pointed out the great distinction between fancy and practical husbandry. "I remember," he remarked, "an amusing anecdote of a certain nobleman, who was a great farmer, and also a great epicure. He kept a famous prize ox; he kept also a famous French cook. Once on a time he invited some distinguished friends to accompany him to his country seat, and sent the cook on a few days before to prepare for the entertainment. As soon as he arrived he was impatient to show his friends his prize ox, and carried them off to the farm yard. When he came to the stall in which the ox was kept, lo, and behold, the ox was gone! He called to the herdsman, 'Why, where is my prize ox?' 'Please your lordship,' said the man, 'the French cook came to look at him two days ago, and admired him greatly; since then the ox has disappeared.' Much astonished, my lord hastened to seek an explanation of the cook, and found him very busy in his private room near the kitchen. 'What is this story about my prize ox? What have you done with my Durham ox?' 'Ah, my lord,' said the cook, 'I have him here safe and sound;' and so saying, he opened the cupboard, and on one of the shelves showed his lordship a small jar. Pointing to the jar, he said, with gauc complacency, 'There! you see, my lord, he was rather too tough for a roast, but I have stewed him down into a famous sauce!' Now, I am sometimes reminded of that anecdote when some gentleman fancy farmer carries me over his model farm. One sees much to admire in expensive nick-nacks and clever inventions, but when one delicately inquires into the state of the balance sheet the admiration cools. And many a fancy farmer who wants to look at his net profit as my



lord wanted to look at his prize ox, may be astonished to find how many pounds of solid substance may be scientifically stewed down into a very small jar of sauce." He enlarged upon the advantages of agricultural societies both to the farmer and labourer, and then proceeded to speak of the importance of utilising the sewage of towns to agricultural purposes:—"I remember, when I held the Colonial seal, the trouble and toil it cost me to secure from some distant islands a scanty supply of guano, while all the time, close at hand, a few of the London sewers were every year casting away into the Thames more than half a million's worth of a manure considerably more valuable for the general purposes of agriculture than that guano which ships were fitted out to bring home, in order that it might be retailed at a price which rather fits it for the phials of an apothecary than the fields of a farmer. I said half a million's worth of money was thus thrown away, but that is a very low estimate of the real waste. In Flanders, for instance, where I have been lately, the value of sewage is calculated according to the numeral population, especially in towns. It is there calculated at £1 7s. a head yearly. In Belgium it is calculated at a still higher rate. So that, if the population of London be taken at 2,000,000 a means of increasing the productive wealth of the country, which, according to the estimate of Flanders would be worth £2,700,000, is exclusively devoted to poison the waters of the Thames, and administer gratuitous disease to her Majesty's metropolitan subjects. If we may condescend to take lessons from barbarians, the Chinese may, in this respect, be our teachers. The rapidity with which the Chinese bring almost any soil into cultivation, and, when brought into cultivation, the enormous crops which they contrive to take from mere handfuls of land, have been the wonder and admiration of travellers. But the great secret of the Chinese is in the utilisation of sewage. The proverbial fertility of Belgium is owing, in much, to the same cause. But it is not only the sewage of London which is wasted, but that of all our own rural towns; although in them there appears a more impatient desire to remedy acknowledged abuses than seems to be the characteristic of city aldermen and metropolitan boards. When I consider how many populous towns there are in this country, I heartily wish we could send among them a few enlightened Chinese engineers to devise the best practical means by which our town-folk might be enriched by the manure they could sell, and our farmers enriched by the manure they could buy. But, in the meanwhile, until some such scheme is devised and agreed to, we must fall back on our old friend the farm-yard dunghill, assisted, indeed, by various chemical manufactures, but never to such a degree as to supply its place. Professor Liebig is, no doubt, right in considering the chief art of productive husbandry to consist in the skilful application of

manure. David Hume tells us, in one of his essays, that all the vast apparatus of our government has ultimately no other object or purpose than the distribution of justice to the soil—in other words, the application of that manure which gives back to the soil the nutriment we take from it, or supplies the nourishing properties which nature had neglected to bestow. Eight hundred years ago there was a very learned dispute whether or not the earth was an animal. We have now discovered that the earth is so far an animal that it requires to be fed and will not bear to be starved. A remarkable instance of this truth is mentioned by a celebrated agricultural authority, in some of the Southern States of America—such as Maryland and Virginia. In these States there were large districts of some of the most fertile land in the world, the crops they yielded were prodigious; but, unluckily the cultivators neglected the manure; they took from the land the alkalies and salts, which they did not replace, and these districts had now become so hopelessly sterile that they have been altogether abandoned as a desert. Now, if it be true that the fertility of the soil thus depends on the nourishment we give to it, there can be no stronger argument for the perfect confidence which ought to exist between landlord and tenant, so that the enterprise of the former may not be checked by any reasonable fear that he should not have his fair share of the profits in whatever he permanently adds to the fertility of the soil. For, on the one hand, the farmer cannot, on the long run, enrich himself unless he does justice to the land, and, on the other hand, the landlord cannot, on the long run, benefit his estate unless he does justice to the cultivator. The healthiest condition of productive industry, whether in farming or anything else, must be that which attracts to its cultivation capital and intelligence by the rational calculation of adequate returns. Now, when I look forward I can see many causes at work to give assurance to investments in agriculture, whether for the owner or the occupier. The increase of population, the certainty that new towns will spring up in the neighbourhood of railway stations, the tendency to building even in the quietest old rural towns if sufficiently near to railway communication—above all, the vast and progressive influx of gold, all must serve every year more and more to increase the value of land, widen the demand for its produce, and maintain the standard of its remunerative prices."

### Lake Superior Region.

The following facts as stated in a recent article of the *Globe*, are full of hope and interest in relation to an extensive and yet unsettled portion of British territory. The great Northwest when surveyed and opened up to settlers

will afford a profitable and unbounded field to agricultural, as well as mining enterprise.

"We have received from Sault Ste. Marie some very satisfactory and pleasing proofs of the capacity of the neighboring region to sustain the human family. They came to us in the shape of specimens of fall and spring wheat, oats, peas, beans, barley, potatoes, beets, turnips, carrots, cabbage and parsnips, grown in and around the village of Sault Ste. Marie, partly by Mr. Pind, the postmaster, the rest by neighboring settlers. As a matter of course, it has been known that root crops could be grown throughout the entire Lake Superior region, but such specimens of roots as we have obtained are not often exceeded in the western peninsula of Upper Canada. The potatoes would have bid high for the first prize at the late show in Toronto had they been exhibited. Spring wheat, oats, peas and barley, it was also known, could be grown very far to the north, but it was not believed until the experiment was tried, that fall wheat of the finest quality could be produced in the latitude of Sault Ste Marie. We think this fact of the greatest importance. There has always been an impression prevalent that the country lying between the Georgian Bay and the head waters of Lake Superior was not as fit for settlement as other parts of Upper Canada. It was thought to lie too far north, have too severe a climate. The same prejudice prevailed against the northern part of the western peninsula. It is only a few years ago since it was believed the climate of the counties of Simcoe and Grey were too cold to permit of the lands affording a full return to the Agriculturist. The fine settlements in the townships on the shores of the Nottawasaga bay alone would have caused this prejudice to explode, even without the testimony of the magnificent range of country stretching west to the Saugeen. We fancy there will soon be a similar dis-allusion in reference to the Lakes Huron and Superior County. Certainly there will if this sample of fall wheat is a fair specimen of what can be grown throughout that region. People enquiring for a place of settlement will not be content to take hearsay evidence, and will make personal examination and act on their own judgment.

"It is not upon agriculture alone that this region will depend for its future progress. It has splendid timber, rich fisheries and minerals, the extent and value of which are known to be great, although, from the folly and lack of knowledge of the early explorers, but little has yet been done to make them practically available. It is a well watered country, inviting to the lumberer and the manufacturer, and there are many points along its shores where large and prosperous towns will unquestionably arise. Look, for example, at the position of Sault Ste Marie, situated on the highway which will pass the gigantic traffic of both sides of Lake Superi-

or and of the North West. It has rich minerals within a few miles, abundant water-power easily made available, and a fertile tract of country behind it. Land within a few miles of this place can be had from the Government for 70 cents an acre, and at a greater distance for 20 cents. The demand for agricultural produce is already good.

"Throughout this entire region there are many things to attract the man in search of a new home, and we trust that explorers will be numerous during the coming spring. Not only is it of great importance to Canada that this region should be itself opened up; its settlement will have a most important effect in encouraging movements still further to the westward. It is the first stepping stone to the Saskatchewan, Fort William is the second, Fort Garry is the third."

### On the Commercial Value of Artificial Manures.

BY DR. AUGUSTUS VOELCKER.

Having in my capacity of consulting chemist to the Royal Agricultural Society, numerous samples of all kinds of artificial manures annually submitted to me for examination and opinion, and having, moreover, made myself practically acquainted with the manufacture of artificial manures, and attentively followed its rise and progress, I believe that I am in a position to say, without hesitation, that the true money value of a manure cannot always be calculated with anything like precision by mere reference to an analysis and certain valuation tables. I feel inclined to go a step further, and maintain that, at the present time, such mere rule-of-three calculations frequently convey wrong impressions of the value of certain manures, and do not further the real interest of the consumer. In proof of this, I may state that, not long ago, I saw a copy of an analysis of a manure, the commercial value of which, estimated according to the usual tables, was given at £11 10s. a ton. It may, perhaps be presumed that this manure is manufactured under peculiarly favorable circumstances; but this is not an exceptionable case, for the calculated value of certain superphosphates rich in soluble phosphate of lime is generally £2 or £3 higher than the price at which they are actually sold. On the other hand, it is no unusual occurrence to meet with really good and cheap fertilizers, which, submitted to ordinary commercial analysis, give apparently unsatisfactory results, inasmuch as their value, when calculated according to any of the approved tables, is set £1 to £2 lower than their true money value. Recent experience has convinced me that the buyer may now justly expect something more in a manure than the mere agreement of its calculated value with the price at which it is actually sold. It



is comparatively speaking, easy to prepare a manure say at £6 a ton, the calculated value of which amounts to the same sum; but such agreement, in my opinion, is no guarantee that the manure is really worth that price. It is well known to all acquainted with the peculiarities of the trade in artificials that many samples which, as the saying is amongst manufacturers, "analyse well," can be produced at a cheaper rate than others which do not analyse so well, but which, nevertheless, show a better result in the field, and possess a higher agricultural and commercial value.

I should much regret if these observations should induce any one to deny the utility of submitting artificial manures to chemical analysis. Without a correct analysis, not even an approximate estimate of the value of a manure can be given; it is, therefore, and always will remain, the most important and the most indispensable instrument in conducting such an enquiry; but there are other data likewise to be taken into consideration before the true money value of manures can be determined.

Believing chemical analysis to be of the highest practical utility, and fearing that discredit may be brought upon it by our "Manure Calculators," I am anxious to place in a proper light the ordinary money calculations which are given by most chemists with the analysis of artificial manures.

These calculations in many instances, do not deserve the name of valuations, for instead of indicating what the manure is worth to the consumer, and at what price it can actually be bought in the market, they show an imaginary value, which, in some cases, is much lower, and in others much higher, than the price at which the manure can be supplied. Take, for example, the following numbers which express the

*Composition of a Sample of Superphosphate selling at £6 10s. a ton.*

|                                                |        |
|------------------------------------------------|--------|
| Moisture .. .. .                               | 14.62  |
| *Organic matter and water of combination ..    | 9.92   |
| Bi-Phosphate of lime .. .. .                   | 18.02  |
| (Equal to bone earth rendered soluble, 28.12.) |        |
| Insoluble phosphates .. .. .                   | 8.46   |
| Sulphate of lime .. .. .                       | 42.15  |
| Alkaline salts .. .. .                         | 2.34   |
| Insoluble silicious matter (sand) .. .. .      | 4.49   |
|                                                | 100.00 |
| * Containing nitrogen .. .. .                  | .59    |
| Equal to ammonia .. .. .                       | .71    |

An exceedingly simple method by which the value of artificial manures is calculated is to regard the analysis as representing the composition of 100 tons of manure, and to multiply each constituent by its assumed market price per ton, and then to add up all the products. We thus obtain by calculation the price of 100 tons, and, by dividing this by 100, the assumed value of one ton.

The following list gives the price per ton of each constituent, according to the valuation

tables of Professors Way and Anderson, and Mr. Nesbit:

|                              | Way. |       | Anderson |       | Nesbit. |       |
|------------------------------|------|-------|----------|-------|---------|-------|
|                              | £    | s. d. | £        | s. d. | £       | s. d. |
| Organic matter .. .. .       | 1    | 0     | 0        | 0     | 1       | 0     |
| Soluble phosphate (i. e.)    |      |       |          |       |         |       |
| bone earth rendered soluble  |      |       |          |       |         |       |
| by acid .. .. .              | 33   | 0     | 30       | 0     | 24      | 0     |
| Insoluble phosphates .. .. . | 7    | 0     | 7        | 0     | 8       | 0     |
| Sulphate of lime .. .. .     | 1    | 0     | 1        | 0     | 1       | 0     |
| Alkaline salts .. .. .       | 1    | 0     | 1        | 0     | 1       | 0     |
| Ammonia .. .. .              | 56   | 0     | 60       | 0     | 60      | 0     |

Calculated according to Professor Way's table, we obtained the following value for this superphosphate:—

|                                    | Value per ton. | £  | Total | £      |
|------------------------------------|----------------|----|-------|--------|
| Moisture .. .. .                   | 14.62 by       | —  | —     | —      |
| *Organic matter .. .. .            | 14.62 by       | 1  | —     | 14.62  |
| Bi-phosphate of lime .. .. .       | 18.02          | —  | —     | —      |
| Equal to bone earth                |                |    |       |        |
| made soluble .. .. .               | (28.12) by     | 33 | —     | 927.96 |
| Insoluble phosphates .. .. .       | 8.46 by        | 7  | —     | 59.22  |
| Sulphate of lime .. .. .           | 42.15 by       | 1  | —     | 42.15  |
| Alkaline salts .. .. .             | 2.34 by        | 1  | —     | 2.34   |
| Insoluble silicious matter .. .. . | —              | —  | —     | —      |
|                                    | 100.00         |    |       |        |
| *Containing nitrogen .. .. .       | .59            |    |       |        |
| Equal to ammonia .. .. .           | .71 by         | 56 | —     | 39.76  |

Calculated value, £10 16s. per ton

£1086.05.

Proceeding in the same manner, the price of the same superphosphate will be £10 according to Dr. Anderson's, and £8 6s. according to Mr. Nesbit's table. Whether we take Professor Way's or Anderson's or Mr. Nesbit's tables, in either case there is a great discrepancy between the actual price at which this article is sold and its calculated value. Similar, and in some cases still greater, differences can be noticed in the calculated and actual value of many samples of superphosphate, especially those made exclusively from coprolites and other mineral phosphates. It evidently appears from these facts that at the time when Professors Way, Anderson, and Nesbit drew up their valuation tables soluble phosphate of lime could not be manufactured so cheaply as at present, and that consequently the price per ton of soluble phosphate now requires to be reduced, especially if Professor Way's or Dr. Anderson's figures are taken as standard values in the calculation, and the manure under consideration is entirely or principally made from mineral phosphates.

I purposely abstain from giving an amended price for soluble phosphate of lime, for such a price cannot be fixed in a general way and then applied to particular instances.

The fact is, the commercial value of phosphate of lime, like that of many other minerals, depends in some measure on the source from which it is derived, and the nature and the amount of other substances with which it is associated. Thus, soluble phosphates cannot be produced at as low a price when made from bones as from mineral phosphates. Then why not make it in the cheapest possible form? is a question which

naturally suggests its if, but which is answered by the fact that in many instances bones partially dissolved in oil of vitrol produce a better practical result on the turnip crop on light soils than a mixture containing an equivalent amount of soluble phosphate made from coprolites and insoluble bone phosphate.

We thus see that it is not enough that there should be a certain amount of soluble and insoluble phosphate in a turnip manure, but that the very source from which the fertilizer is obtained affects its agricultural as well as its commercial value.

A superphosphate containing say, 15 or 18 per cent. of soluble, 15 per cent. of insoluble phosphate in the shape of bone, and  $2\frac{1}{2}$  per cent. of nitrogen can be made much cheaper by producing in the first place the soluble phosphate from coprolites, and mixing the coprolite superphosphate afterwards with bone-dust and a certain quality of shoddy, or a similar nitrogenous refuse material, than by making it entirely from bones. But as superphosphate from bones has a better effect in the field, and costs the maker more money, and thus has a higher commercial value than a manure which on analysis furnishes the same amount of soluble and insoluble phosphate and nitrogen, the constituents of a bone superphosphate, and amongst them a soluble phosphate of lime, must have a higher commercial value in this combination than in mere mixture of dissolved coprolites, bone dust, and a nitrogenous refuse matter.

Again up to 28 or 30 per cent. of soluble phosphate (i. e., bone earth rendered soluble by acid) may be produced in a superphosphate simply by mixing phosphatic materials with a certain quantity of sulphuric acid; but if a much higher proportion of soluble phosphate is required, recourse must be had to more complicated and expensive chemical processes; and these processes, of course, add to the expense at which the soluble phosphate is obtained in highly concentrated manures, such as Messrs. Burnard, Lack & Co's concentrated superphosphate, which contains no less than 44 per cent. of soluble phosphate.

Notwithstanding the increased expense in producing the soluble phosphate in a higher concentrated superphosphate, it may be good policy and economical to the consumer to prepare such concentrated fertilizers for exportation or for application in localities where the cost of carriage of the diluents in or inary manures amounts to much more than the extra expenses of the process of preparing the effective constituents in a highly concentrated form.

Since then, in peculiar cases such a concentrated manure has a higher relative value for the consumer than an ordinary sample containing 18 to 22 per cent., and is prepared at greater cost by the manufacturer, it certainly would not

be right to estimate the money value of the soluble phosphate in both at the same rate.

Another reason which deters me from attempting to fix a price for soluble phosphate—or, indeed, for any manuring constituent—is, that the price of the same substance in the same form varies continually from a variety of causes.

The commercial price of the raw materials employed in the manufacture of manures, like that of everything else, is dependant upon demand and supply, and regulates itself accordingly. The consumer, in my opinion, has a far better guarantee for a supply of cheap fertilizers in the competition of respectable firms than in the publication of any fallible, because constantly changing, price list. There exists, moreover, the danger that the price lists fixed by chemists of standing are frequently applied by others whenever it suits their purpose long after they have become obsolete. In the interest of the farmer I feel, therefore, bound not to publish an amended price list of fertilizing matters.

(To be Continued.)

## Agricultural Intelligence.

### Thorndale Short-Horn Blood.

The *Country Gentleman* in his last issue observes in reference to this celebrated stock at a recent sale in England:—

Farther testimony is given in our last foreign mails to the vale of the Thorndale blood. "Another high—and what is better still, a thoroughly honest—average has been added to Short-Horn history," says the *Mark Lane Express* in opening its account of the sale of Mr. Hales' herd at North Frith, Sept. 24th. Mr. H. was the purchaser last year, it will be remembered, of the 4th Duke of Thorndale, sent to England by Samuel Thorne, Esq., at 400 guineas (say \$2,000); and his wisdom in paying such a price has been fully vindicated in the results of his own sale. The 4th Duke it seems, was started at 200 guineas, and ran up rapidly, between the bids of Capt. Gunter and Lord Exeter's agent, until he was finally knocked down to the latter at *four hundred and ten guineas*—in other words, Mr. Hales has had more than a year's use of the bull, and disposes of him now for \$50 more than he paid Mr. Thorne in 1861.

There were also sold at the same time several calves sired by "4th Duke," as follows:—

#### HEIFER CALVES.

|                                                         |        |
|---------------------------------------------------------|--------|
| 2d Kentish Gwynne, calved Feb. 15, 1862, for 41 guineas |        |
| Heiress, do. June 4, . . . . .                          | 64 do. |
| Perfection, do. July 19, . . . . .                      | 35 do. |
| Concord, do. Sept. 20, . . . . .                        | 16 do. |

#### BULL CALVES.

|                                               |             |
|-----------------------------------------------|-------------|
| Athelwald, Calved May 12, 1862, for . . . . . | 26 guineas. |
| Marmion, do. July 17, . . . . .               | 155 do.     |
| The Friar, do. July 15, . . . . .             | 26 do.      |
| Fastus, do. July 23, . . . . .                | 50 do.      |
| Clifford, do. Aug. 16, . . . . .              | 30 do.      |



Here are nine calves, the average age of which on the day of sale, according to our computation, was only 2 months 25 days, sold at an average price only a small fraction less than 50 guineas each, or very nearly \$250.

There were 22 head of other females sold—including young and old, and all but four of them calved in 1860 or previously—which brought an average price per head of about 56 guineas—one of them, "Moss Rose," by Marmaduke out of Cambridge Rose 6th, going for 245 guineas. Excluding her the average for the other 21 is lower than that for the four young heifers sired by "4th Duke." Of the bulls, beside 4th Duke and his five calves, there were four sold at an average of 43 guineas each. But in referring to the prices at which the cows were sold, it should have been remarked that 14 of them had been served by "4th Duke," which would of course have added considerably to the prices they commanded.

## Horticultural.

**PROCEEDINGS OF THE FRUIT GROWERS' ASSOCIATION** of Upper Canada, at the General Meeting held in the Agricultural Hall, corner of Yonge and Queen Streets, Toronto, on Wednesday, Nov. 12th. 1862.

The meeting was called to order by Mr. Vice-President Leslie, the President, Judge Logie, being absent. After the reading of the minutes of the last meeting, the Association proceeded to discuss and determine the varieties of Plum best suited to our climate.

### JEFFERSON PLUM.

Mr. Arnold, of Paris—Prefer the Jefferson to all others. It ripens about the middle of September, is of good quality, while the tree is hardy and grows well.

Mr. Gray, of Toronto—I do not think it quite as desirable for this locality.

Mr. Geo. Leslie, jr., of Toronto—Is a large, fine Plum, but not so desirable here as the Washington.

Mr. Laing, of Hamilton—I do not find it the best, would prefer many other varieties before it.

Mr. Johnston, of Norval—I do not find it to do well. It did not succeed with Mr. Young of Georgetown. In flavour and productiveness is not equal to some others.

Mr. D. W. Beadle, of St. Catharines—It has so far proved to be but a moderate bearer, and the tree a very poor grower, not much better than the Green Gage.

Recommended for further trial.

### GREEN GAGE.

Mr. Arnold, Paris—The fruit is too small for market, though of the highest flavor. The tree is a very slow grower, and exceedingly subject to the black knot.

Mr. Gray, Toronto—The tree is a very slow

grower and requires very good cultivation, but the first is of the first quality.

Mr. Geo. Leslie, jun., Toronto—It is the worst grower of all the plum trees in cultivation, yet one of the highest flavoured of plums.

Mr. Laing, Hamilton—The fruit is of the best quality, tree good bearer, dwarf habit, and requires good cultivation.

Mr. Johnston, Norval—is one of the slowest growers and most abundant bearers, but the fruit is too small, and not desirable when we have so many other varieties that are larger and better for market purposes.

Mr. D. W. Beadle, St. Catharines—It must be admitted that in excellence of quality the fruit is unsurpassed, but the tree is a most miserable grower, and unsatisfactory to nurserymen.

Recommended for general cultivation as a dessert plum.

### WASHINGTON.

Mr. Johnston, Norval—It will not do for this climate, tree too tender and not very abundant bearer.

Mr. Fleming, Toronto—I have seen very good crops about here; the tree thrives well; have fruited it for 25 years and found it quite hardy.

Mr. Bruce, Hamilton—It does well about Hamilton.

Mr. Laing, Hamilton—A very good plum, tree hardy and a great bearer.

Mr. Geo. Leslie, jun., Toronto—Is one of the best; a good grower and good bearer, and hardy tree.

Mr. Gray, Toronto—Know of none that succeed better in this vicinity.

Mr. Arnold, Paris—The tree is perfectly hardy; fruit good, but a very poor bearer.

Mr. Geo. Leslie, sen.—One of the best bearers; an excellent market variety; tree perfectly hardy.

Mr. D. W. Beadle, St. Catharines—I have found it to bear immense crops on sandy soil.

Recommended for general cultivation.

### SMITH'S ORLEANS.

Mr. Keating, Jordan—Is a very good plum; tree hardy, and a great bearer.

Mr. Johnston, Norval—A good bearer, good grower, worthy of cultivation; good for preserving.

Mr. Lea, York—A valuable variety; good bearer.

Mr. Fleming, Toronto—An excellent variety.

Mr. Bruce, Hamilton—It is a general favorite with us.

Mr. Gray, Toronto—Have known it for many years, and have always found it first class.

Mr. Arnold, Paris—Is a good plum, tree a very good bearer, a dessert fruit, not large enough for market.

Mr. Vice P. Leslie, Toronto—Is a medium bearer, but very good fruit, size medium, larger than any of the common blue plums, tree hardy and good grower.

Mr. D. W. Beadle, St. Catharines—A very desirable variety in quality of fruit and growth and hardiness of tree.

Recommended for general cultivation.

## IMPERIAL GAGE.

Mr. Johnston, Norval—Is a good plum, medium quality, size medium, not a sure bearer.

Mr. Fleming, Toronto—A great bearer, not first quality

Mr. Bruce, Hamilton—Bears freely, medium quality, hardy.

Mr. Laing, Hamilton—Most prolific bearer, hardy, but fruit of second quality.

Mr. Geo. Leslie, jr., Toronto—Is a good bearer, but fruit of poor quality

Mr. Gray, Toronto—It succeeds well here, the tree does not seem to be subject to the Black Knot, fruit of second quality.

Mr. Arnold, Paris—I find it to be of the finest flavour, tree a fair bearer, my soil is rather light.

Mr. Vice P. Leslie, Toronto—Very great bearer, very healthy tree, a fine market fruit, though of only second quality.

Recommended for cultivation, particularly on light soils.

## REINE CLAUDE DE BEVARY.

Mr. Arnold, Paris—of the very first quality where the season is long enough to ripen the fruit.

Mr. Lang, Hamilton - a very desirable sort.

Mr. Gray, Toronto—A late but very desirable variety, will keep well and improve after being gathered.

Mr. Geo. Leslie, jr.,—A very valuable late plum

Mr. D. W. Beadle, St. Catharines—The best late plum.

Recommended for general cultivation.

## PRINCES' YELLOW GAGE.

Mr. Gray, Toronto—Is a good plum, bears well, medium size, of second quality.

Mr. Arnold, Paris—Medium size, medium bearer and second quality.

Mr. Laing, Hamilton—A fair quality and a good bearer.

Mr. Geo. Leslie, Toronto—It is the least liable to the black knot, size and quality medium.

Mr. Fleming, Toronto Is a second quality plum, but the tree is a good bearer and grows well.

D. W. Beadle, St. Catharines—It seems to flourish in the County of Lincoln.

Recommended for general cultivation.

## LOMBARD.

Mr. Arnold, Paris—The fruit is of medium size, and not best quality, but will resist the attacks of the Curculio the best of any variety, the tree is very productive.

Mr. Bruce, Hamilton—Is a great bearer, free grower and a very valuable sort.

Mr. Johnston, Norval—I have a very high opinion of this variety, it is very hardy, very prolific, very free from Black Not and from every other disease. Is the best adapted to Canada of any known variety.

Mr. D. W. Beadle, St. Catharines—While I do not consider the quality of the fruit as fine in flavor as many other sorts, yet I do esteem it

the most valuable and desirable for general cultivation. The tree is remarkably healthy and if not perfectly exempt from the Black Knot is much less subject to it than many sorts. On a sandy soil where the Curculio is most troublesome, this variety never fails to mature a good crop in spite of that insect.

Recommended for general cultivation.

## COES GOLDEN DROPS.

Mr. Johnston, Norval—Is very free from disease, late sort, and very desirable on that account, of good flavour, juicy.

Mr. Fleming, Toronto—Very valuable, should be in every collection

Mr. Gray, Toronto—Very desirable

Mr. Vice P. Leslie of the first class.

Mr. Arnold, Paris—I should call this the best late plum

Recommended for general cultivation.

## LAWRENCES FAVORITE.

Mr. Geo. Leslie, jr., Toronto—Very early and of very fine quality, one of the best for table, tree hardy.

Mr. Gray, Toronto—Fine early dessert fruit, hardy

Mr. Johnston, Norval—A very good plum, early.

Mr. Vice P. Leslie, Toronto—Very sweet and fine, but small size.

Recommended as an early variety.

Mr. Johnston, of Norval spoke of the Pond's Seedling, that he believed it to be one of the best varieties now grown, the largest plum, color red or a yellow ground stone small, the flavor very sweet and rich, fruit will keep long after being plucked, tree a very thrifty grower, and requires a good strong soil with high cultivation

This variety not having yet been furnished in Canada the Society took no action upon it. Mr. Johnston stated that he had resided in Norval only about two years, and that he had not seen the fruit in Canada but at the place of his former residence near Rochester.

## YELLOW EGG PLUM.

Mr. Vice P. Leslie, Toronto—This is one of the very best for cooking and preserving; trees hardy, good bearers and rapid growers.

Mr. Arnold, Paris—A showy, coarse fruit, for preserves, tree tender with

W. G. Leslie, jr., Toronto—Good for preserving, and market.

Mr. Gray, Toronto—One of the best for cooking and market; tree hardy.

Mr. Laing, Hamilton—Very handsome and profitable.

Mr. Bruce, Hamilton—Hardy and valuable for market.

Mr. Fleming, Toronto—Very hardy, good bearer, excellent for preserving.

Mr. Johnston, Norval—Excellent market variety; hardy tree, fruit coarse.

## RECOMMENDED FOR GENERAL CULTIVATION.

The Association then proceeded to the dis-



cussion of the question, which are the six best varieties of Grape for open air culture in Canada? Gentlemen were requested to write down the names of such as they thought most desirable, and hand the list to the Secretary.

Mr. Gray, Toronto—Delaware, Concord, Hartford Prolific, Diana, Isabella, Ontario.

Mr. Arnold, Paris—Concord, Diana, Delaware, Rebecca, Ontario, Hartford Prolific.

Mr. G. Leslie, jr, Toronto—Delaware, Ontario, Concord, Hartford Prolific, Rebecca, Diana.

Mr. J. W. Keating, Jordan—Delaware, Rebecca, Concord, Diana, Ontario, Clinton.

Mr. Johnston, Norval Delaware, Concord, Isabella, Dura, Clinton, Ontario.

Mr. McNab, Hamilton Rebecca, Sweetwater, Delaware, Diana, Hartford Prolific, Clinton and Hamilton, supposed to be a seedling of the Isabella.

Mr. W. J. Keating, Jordan—Delaware, Sweetwater, Clinton, Diana, Rebecca and Concord.

Mr. Vice P. Lesslie, Toronto—Concord, Delaware, Diana, Hartford Prolific, Ontario, Isabella

Mr. D. W. Beadle, St Catharines—Said he was not yet prepared to recommend six varieties, but would name only Concord, Rebecca, Delaware and Hartford Prolific, as being from his experience most likely to give satisfaction

A conversational discussion then ensued upon the best mode of planting, pruning, training, and cultivating the grape vine in the open air, during which much valuable information was elicited

Upon motion of Mr. J. W. Keating, seconded by Mr. Fleming, it was unanimously resolved, that Mr. Charles Arnold, of Paris, be requested to prepare a paper upon the open air culture of the grape, to be read at the next meeting of the Association.

The Secretary read a letter from Mr. S. B. Freeman, of Hamilton, relative to an apple found growing on his father's farm, specimens of which were exhibited. Upon testing the specimens, they were found to be of excellent quality, and the Association requested the Secretary to publish a description of the apple, and give it the name of the Freeman apple, deeming the fruit worthy of more extended trial

**Description of the Freeman Apple.**—Size small; color, light yellow, with a bright blush on the sunny side, thickly sprinkled with small russet dots or specks. Calyx closed, set in a shallow finely plaited basin. Stem long and slender, set in a deep cavity. Flesh tender, fine grained, juicy and breaking. Flavor a very pleasant, sprightly, sub-acid. Quality "very good," if not "best."

Mr. Fleming produced a branch bearing two apples in such close contiguity that they touched each other, the one a Pomme Grise, the other yellow, with a red cheek and wholly free from russet.

The Secretary read a paper from Mr. Laing, of Hamilton, which is published below. On motion of Mr. Arnold, the thanks of the Society were presented to Mr. Laing for his interesting

paper, with the request that he would allow it to be published in the Transactions of the Association.

On motion of Mr. Laing, seconded by Mr. Keating, the Secretary was requested to communicate to the Board of Agriculture the thanks of the Association for their kindness and liberality in granting them the free use of their Hall for the purposes of the meeting.

Mr. Geo. Leslie, of Toronto, exhibited 25 varieties of apple. Mr. Johnston, of Norval, 20 varieties of apple. Mr. Keating, of Jordan, 3 varieties of apple. Mr. McNab, of Hamilton, 4 varieties of grape. D. W. Beadle, of St. Catharines, 5 varieties of pear, and among them the Fulton, a very hardy sort, originated in Waine, of good quality, and promising to be very valuable for Canada.

On motion adjourned to the Annual Meeting, to be held in the City of Hamilton on the third Wednesday (the 21st) of January, 1863.

### Remarks on the Planting and Culture of Fruit Trees.

**MR. PRESIDENT AND GENTLEMEN.**—At the meeting of the Association held in St. Catharines in July last, a remark of importance was made by Dr. Craigie, which was passed over without much notice. At this I was somewhat astonished, as it applied so specially to the most essential points of fruit culture, such as situation, aspect, soils, preparation of soils, planting, pruning and the general management of the orchard. It is a well-known fact that to secure success in anything, right measures must be adopted and the proper means used. It must also be very clear to all, that a knowledge of, and a proper understanding on those points are absolutely necessary. I think I am justified in saying that much ignorance exists on this matter all over the country, therefore the sooner something is brought out to bear fully on it, the better, and it would be a great matter for the benefit of this Association and for the good of the Province if every member would lay before this Board what practical knowledge he may possess, so that it may be enabled to point out to the country a sure and safe course to pursue. I have been connected with Horticultural and Agricultural pursuits for the last 40 years, and have during that period practised professionally in Scotland, England, Ireland and upwards of six years in this country, and I maintain that more failures are caused by ignorance, mismanagement and a misconception of what Dr. Craigie referred to than anything else that I know. Thousands of good healthy young trees are yearly put out into bad situations and unsuitable soils, where they soon die, or linger out a few years of an unprofitable, miserable existence. Every fruit tree has its own peculiar kind of soil such as it likes, and which practical men may know, but many of the agricultural community do not, therefore it becomes the

duty of this association to tell them. With a view to this I shall notice the heads of this subject by a few practical remarks from my own experience and observations.

First, then, as to situation. It should neither be too high nor too low, if too high the trees are exposed to sharp cutting winds, if too low they will be subjected to hard frosts and damp apours, all of which are very injurious. This the nature of the location with judgment must determine. A south and south-east aspect is invariably preferred in the old country, here the south and south west are so.

Abercrombie observes, "An open aspect to the south-east is itself a point of capital importance in laying out a garden or orchard"

Downing says, "It is difficult to give any precise rules as to aspect." "Perhaps," he says, "the very best aspect on the whole is a gentle slope south-west, because in such a position the trees, when in blossom, are sometimes protected from the bad effects of the morning sun after spring frosts." Good shelter should in all cases, if possible, be provided.

Drainage and trenching are the next things in order as preparatory operations. Of whatever nature the soil may be, if the least damp or retentive, drainage is necessary. I may say, whether damp or not, unless on a dry substratum of lime stone. The good of drainage is not altogether confined to carrying off the water and drying the land. The circulation of air that continually passes through the ground will be found productive of the most beneficial effects. Let the drains be put in of tiles  $2\frac{1}{2}$  or 3 inches, say 20 feet apart, more or less, as circumstances may direct, and from 3 to 4 feet deep according to the nature of the subsoil,—place vertical air tubes made of tile at all the corners and in the straight lines at every 100 yards; the tubes to be inserted into the bottom tiles, and to have wood stops or plugs of sufficient length or height so that they may easily be seen above the ground and used when required. Care must be taken if a plough or cultivator be used not to disturb them. This mode of drainage has a wonderful effect on all kinds of soils, and in no way is it more marked than in ground under fruit cultivation. It may be considered expensive, but if well done will very soon amply pay for the outlay. All orchard grounds must be well trenched either by the plough or spade,—the latter is the best. Then have it properly prepared for the different kinds of trees—a few of which I shall notice, with what I consider their suitable soils. All fruit trees like loams, some of a light nature, others more heavy and strong—soils of a calcareous nature are desirable for all, particularly for stone fruits. Stiff clays of all kinds are considered injurious to all trees, and particularly so for fruit, unless thoroughly drained and pulverised and brought into a proper state of fertilization. When so it is most productive, very durable, and will answer well with many of the kinds.

The Apple prefers a rather soft loam, containing a small portion of sand with a due proportion of good, well decomposed, stable yard manure. In such a soil the trees grow very clean, are productive, and flourish long. The fruit attains good size, colour and flavour, and is not subject to disease. It is not necessary that the soil should be very deep, say from 20 to 24 inches, even less in some locations. Depth is more necessary in this country than in the old, on account of the long terms of dry weather and hot scorching sun.

The Pear on a stock of its own species requires a deeper and stronger soil than the apple—more rich and mellow. In my own experience I have seen the pear succeed remarkably well in a drained pulverised clay, the trees healthy and productive. The Quince stock thrives best in a rich moist soil, but of course drained. In both cases plenty of good manure is necessary.

The plum answers best in a medium soil, not too heavy or too light. I have known it succeed very well in a compost of light loam, garden soil and road-scrapings.

Cherries delight in rather a sandy soil, but not gravelly—in the latter they will grow for a few years but soon die. The Cherry will thrive in mostly any soil if rich enough and dry.

Of the Peach it may be said that of late years it has been almost a failure, in some places totally so. This season it looks better. I believe that if the ground into which the peach is to be planted, be of a right nature, well sheltered, properly drained, and prepared, the trees cultivated on the dwarf principle, and well attended to during the summer all would yet be well. Unless the soil is in a proper state, and the necessary attention bestowed, the trees will not mature their buds nor ripen their wood sufficiently to stand the frosts. The dwarf system of culture has many advantages; the trees are easily protected, handy to go about, and are so completely under the eye that nothing can escape unnoticed. The Peach may be grown of any shape to suit convenience, either as a dwarf, Pyramid, or Bush not larger than a Gooseberry or Currants, and planted in a similar manner. In this way the snow will do much to protect the trees in winter, and their foliage the stem and branches in Summer. Being near the ground the heat is more congenial than it otherwise could be when they are grown higher up, as they in general are almost like broom-sticks, and if not staked, shaken about by every wind, and the stems exposed to the hot scorching sun, which often proves very injurious. The Peach, the Nectarine and Apricot, all answer in a rich calcareous soil.

As orchards have been grown, the trees are far too high in the stems to admit of cultivation and pasturage under them. Trees a



less distance apart, branching within two or three feet of the ground, and properly kept under the knife and thumb, would be found preferable, and more profitable, though not not admitting of pasturage or cereal crops.

*Planting*, or rather transplanting. To secure success, this operation ought to be done with great care, otherwise a failure is sure to be the result. Whether the operation be performed in the spring or fall, have all things in readiness; in case of need, have a prepared planting compost at hand, and the pits all dug. In my early days it was the custom to lay a circular space of from 3 to 5 feet diameter of slate or flag stone under the trees, so as to prevent the roots getting down into the subsoil. At the present time in England, on some occasions, they concrete or flag the vine and fruit tree borders, a very excellent plan where it may be necessary. In ordinary orchard-planting such a mode is not much practised, neither is it requisite if the ground be well drained and the planting properly executed, carefully spreading out all the roots, giving them the right direction which they will naturally retain afterwards, keeping near the surface for the benefit of the heat and moisture; great care ought to be taken in lifting the plants not to injure the roots. Avoid deep planting, have the pits wide enough to receive the roots when extended so that none of them rest on the sides of the pit. Before planting prepare the roots by pruning off all the injured or broken parts, taking care of all the finer fibres; cover the bottom of the pit with the prepared compost, raising it a little in the centre, then carefully spread the roots out on the bedding stuff. If the natural soil be not good, plant and fill up the pits with the composts, otherwise use only a little, carefully working it in with the hand amongst the roots; afterwards fill up or spread out the common earth, pressing it down with the foot. It is a very common practice to have a trough or tub with a puddle made from the drainings of the dung hill ready at hand, in which the roots of the plants are immersed before planting, this is very advisable particularly, if the roots be dry. When the whole is completed, if the plants are standards they ought to be staked, and the ground over the roots mulched with litter from the stable-yard. If planting be done in fall it should be performed as early as the plants will admit of being lifted (as a general rule from the 15th of October until the freezing up of the ground) in order that they may have time to take to the ground, and the roots form spongeoles before the winter sets in.

I cannot conclude this paper without noticing the necessity of a careful selection of trees in varieties suitable for the location and climate. It is also very necessary that the public be induced to deal with respectable

nurserymen for their trees, and warned to have on no account or consideration anything to do with the Fruit tree jobbers, or, as they term themselves, *agents* for the sale of Fruit trees. It is not only disappointing, but also a very serious loss when a young orchard comes into bearing to find the fruit almost worthless. Nurseries or nurserymen are not all alike commendable, no more are their trees, but the respectable and those of standing I trust will, and ought for their own interest do what is right. Every purchaser ought to satisfy himself that those from whom he purchases are the duly authorised agents of some responsible and respectable nursery, and make sure in getting good, clean, well-rooted healthy trees, taking care to avoid all prong or carrot-rooted plants, selecting plants of good shape, with well furnished fibrous roots. Such will be found in all well managed nurseries.

GEORGE LAING.

Hamilton, 11th Nov., 1862.

P. S. I may at some future period have something to say on the general management of the orchard, pruning, training, &c.

G. L.

### Peterboro' Horticultural Society.

We are glad to learn that this young Society is making steady and healthful progress. The autumnal show (the report of which got for a while mislaid), considering the lateness of the season, was on the whole quite satisfactory; comprising flowers, fruits and vegetables, highly creditable to their producers.

The flowers were good, especially a new *Petunia*, *marginata*, exhibited by Mrs. Robert Nicholls, to which the judges awarded the first prize as a "specimen plant." The collections of Asters raised by Sheriff Hall and Mr. Cooney, of Verbenas by Mr. William Hamilton, and of Cock's-combs by Rev. J. W. Beck were much admired; and Captain Rubidge and Mr. Scobell afforded a profusion of cut flowers of considerable merit.

The exhibition of Fruit was very superior to that of last year. Mr. Carver's Peach-plums and Egg-plums were especially praised, and Mr. Gilmour's collections of Apples, Pears and Plums deserved and received a large share of notice.

The collections of Vegetables were not so large or so good as heretofore, owing chiefly to the season. Mr. English placed some fine tomatoes upon the table, and a new kind of Savoy Cabbage, the "Fine Waterloo," grown by Mr. Giles, is a great improvement on the older and coarser sorts.

There was a large attendance in the evening when the attraction of music was superadded to the Floral display, two senses being thus simul-

taneously gratified; and such of the remarks of the visitors as reached our ears were calculated to inspire a hope that those who honored the Exhibition with their presence were not dissatisfied with the effort made to please them.

At 9 o'clock p. m., the President of the Society, the Rev. Vincent Clementi, addressed the visitors. He took occasion, in behalf the Society, to thank the Mayor for the very cordial manner in which he had granted the gratuitous use of the Town Hall for the purpose of the Exhibition; and Mr. Philp and the members of the Peterboro' Band for their valuable and unrequited services.

He intimated that he should, at the next Annual meeting, recommend that the Horticultural Show be held in future at an earlier date, when flowers, with such fruits and vegetables as are in season, may be exhibited to the greatest advantage; an opportunity for the display of the later products of the garden being afforded by the Agricultural Association whose show takes place early in October.

## The Dairy.

### Josiah Quincey's Milk Farm.

*(Abridged from the Boston Cultivator.)*

The estate in question is that of the Quincy family, in the town of Quincy, the venerable head of which has lived so long to enjoy the respect of the community for his valuable public services and the fruits of his labours. The farm is one of the finest in New England, having been in the possession of the family for many generations, and the title obtained from the Indians. The land lies in one body of three hundred acres, as level as that of a western prairie. The drive from the public way to the mansion-house is through long rows of magnificent trees, for a quarter of a mile, most of which were planted by the patriarch who yet lives to admire their proportions, and take delight under their shadows.

The whole estate is devoted almost entirely to the business of the dairy. Some 400 tons of hay are cut upon it, the land having been brought to that degree of productiveness as to yield from two to three tons per acre; and the amount of other crops cut for green fodder is probably much larger. Corn, millet, barley, rape, and other grain and plants are cut green, yielding in some instances an enormous amount to the acre.

The number of cows kept ranges from one hundred to one hundred and thirty. They are all stalled in a large barn, one-half or more on the main floor, facing each other, and the remainder in the basement on either side of the main building—the centre under the main

floor being reserved as a manure cellar. On the main floor there is the best ventilation, the large doors at either end being open almost continually, not excepting the winter, when it is found to be too warm to keep them closed. Besides this ventilation, there is an opening through the lofts, and a large ventilator upon the top of the barn. On the lower story, although the ventilation may not be so perfect, it is very thorough, the cows facing the openings on the side of the building. They are bedded with sand, obtained on the estate, and this is believed to be advantageous in many respects. The animals are kept well curried and in good order.

In regard to their feeding and habits, they are kept within doors all of the time, and fed entirely in their stalls. This is found to be the most convenient on an estate entirely open, within one enclosure. They are fed five times a day, and turned out into a yard adjoining the barn for three or four hours in the forenoon, a shed open to the south protecting them from storms. The only exception to indoor feeding is in the fall, when they are turned out for six weeks, with an attendant to keep them from uncut crops. This feeding within doors, and keeping them shut up so much, is not believed to be injurious, as cases of sickness among them are rare. Whether or not there is such a disease as the pleuro-pneumonia, this herd has so far entirely escaped it, although it is reported to prevail on an adjoining estate, none of the cows coming in contact with their neighbours. With such a disease among so large a herd, sad havoc would soon be made.

In the morning and at night they are fed with two quarts of grain or cotton seed meal, the grain being a mixture of corn, meal, and oats, the meal being believed to be of too heating a character to be eaten alone. Their other feed three times a day is of green fodder, generally mixed, and alternating from grass, clover, corn, millet, rape, &c., each being fed with the same food at the same time. A meal of salt hay is given occasionally, and to make the green fodder extend as far as possible through the year, early and late crops are raised, and barley is cut green, salted, and laid away. A narrow watering trough runs before each row of cows, covered, and they are at liberty to drink at all times, a cover of the trough before each cow being easily raised by her. This water is raised by a ram from a brook some fifty rods from the barn, and the supply may be increased or lessened by faucets at the ends of the troughs. In winter an infusion of steam takes the chill from the water, too much cold tending to lessen the quantity of milk given by the cows.

The cows are selected for their milking qualities, without regard to breed. They are



all in early pure natives with an occasional mixture, the natives and, the Ayrshire being esteemed as the best milkers. They are generally from Vermont and the upper part of New York, and a change is made of from thirty to forty yearly. No cow is desired under five years of age, and she is kept so long as she proves to be a good milker, and when she falls below five or six quarts a day she is fatted for market, and will bring enough beef to replace her with another good milker. There are several of the cows who give fifteen quarts a day at the present time, eight or ten being the average. There must necessarily be some who are dry, and with calf; these are pastured within sight of the estate, on a peninsula, where they are easily secured. There are at times from thirty to fifty so pastured. The largest number kept is in winter, when there is the greater number of customers for milk, and the yield is nine hundred quarts per day, lessening in summer to seven hundred.

Immediately upon milking, the milk is put through a large strainer into cans, and the cans placed in a large trough with ice; when the animal heat is driven out of the milk, the cans are closed up. They are then taken to a building devoted to dairy purposes, in which there is a large well. The well is twenty-two feet deep, with seven feet of water, quite cool. This well is divided, making each part about square. A platform containing the cans of milk, about two hundred quarts each, is lowered down so that the top of the can only is above the water. Milk has been kept good four days in warm weather in this well. But it is not designed to keep here long as much as it is to keep it cool while on hand. The morning's milk of each day is kept in this well, and with the night's milk supplies the customers the next day. The consumer has the satisfaction of knowing that the milk cannot be two days old before a new supply comes, which cannot be true of the mixed dairies picked up at a distance of fifty or a hundred miles on the railroads. This milk is supplied to customers in this city by two teams, which leave the farm about two o'clock in the morning and which deliver no milk except that furnished from this farm. It must be obvious, too, that there can be little difference in the quality, the cows having the same feed. In some instances where families desire the milk of the same cow for their children, cans of their own are provided, in which the milk is kept separate from that of any other. Four horses are required for the carriage of the milk, two each day, with one day's rest intervening.

In the same apartment with the wells is a boiler, the steam heating the water for washing the cans, and in the winter tempering the water for the cows. Under the floor of the other apartment, where are kept the milk carts,

is an ice house, which furnishes all that is needed for the dairy. The milk cart horses occupy the rear of the building, and outside, facing the south, is a rack for the drying of the cans. Everything is kept in the best condition, leaving the impression that the milk may be relied upon as a genuine article, free from all foreign substances.

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Prevention Better than Cure.

[The following remarks, relating especially to pleuro-pneumonia, especially apply, nevertheless, to small-pox in sheep; and we extract them therefore from Mr. Gamgee's lately published work.\*]

The great essential in attempting to mitigate losses amongst stockowners is to study the means of prevention. On this point we have been very deficient in Great Britain, not as regards the epizootic lung disease, but other forms of cattle murrain.

These imported plagues in poorer countries than ours, lead governments to establish *cordons militaires*, to slaughter and bury diseased animals, and to compensate individuals for their loss. The whole country is under careful inspection, and persons are bound to report the appearance of a contagious disease, or submit to the infliction of a severe penalty. Such measures would not find favour here; but are we to fly to the other extreme, to continue from one year's end to the other without perceptible abatement in the mortality amongst our cattle, and not only to manifest the greatest carelessness regarding the presence of contagious disorders, but to favour their spread by permitting frauds of the vilest description?

A farmer goes to the market and buys a lot of lean cattle; shortly after purchase pleuro-pneumonia breaks out, and as the condition of the animals prevents a good price being obtained from the butcher, he sends the whole to the market again, knowing them to be unsound, and either the lot is transferred to another farm, or sold to a number of purchasers. I have been asked, when the disease has broken out among a lot of yearlings whether they should be sold at once or chanced. The law takes no cognizance of such a case, the practice is advocated and carried out by those who, in ordinary transactions, are scrupulously honest, and yet if you probe the matter you cannot but admit that the selling of a lot of lean cattle affected with a

\* Our Domestic Animals in Health and Disease. Second division.—Organs of Circulation and Respiration. By John Gamgee, Principal of the New Veterinary College, Edinburgh; Author of "Dairy Stock," "The Veterinarian's Vade-mecum," &c., &c. With numerous illustrations. Edinburgh: Thomas C. Jack, 92, Princess Street. London: Hamilton, Adams, & Co.

spreading malady, though perhaps only in the stage of incubation, is defrauding the purchaser and the nation. Some may find relief under the absurd supposition that diseases are not catching; but if any such individual is cross-questioned it will be found that he would not have sold the cattle had he not believed that the whole were in imminent danger, and that the majority must die.

It is evident that such a practice is totally opposed to the nation's best interests; but in reality the public interest is made up by the sum of private interests involved; and although at first sight the individual threatened with loss thinks he had better clear out his bad stock, he may at his next purchase, be not a whit better off, from the very practice he has encouraged and followed out. I have satisfactorily found, in numerous cases, that it is unadvisable to clear out a farm stock, and local means can be adopted to check mortality with the greatest success.

But there is another way in which the owner of diseased animals is permitted to spread contagion. He is allowed to send them by railway, to entrust them to a salesman, and to expose them amongst healthy cattle that are to be transferred to different parts of the country for grazing purposes. Fat or not fat they are exposed without restriction, and any amount of good stock may be contaminated. A dairyman in town has a cow taken seriously ill. A number of hungry fleshers are ready for her at a good sum, but in order to cause keen competition, the poor animal is walked into the public market, and stands with a number like herself amongst store animals. Such a practice is as reckless and horrible, as if a patient with small pox were placed amongst a lot of non-vaccinated people for hours together; and the healthy cows just fresh from the country are especially prone to imbibe a deadly virus.

I am conversant with another evil demanding instant suppression. A cow-dealer may buy a fine lot of healthy cows for the town. They are trucked, and somewhere near their destination a truck, containing diseased animals is attached to the train. I know an instance of a dealer, who, with three large trucks full of fine English cows, had, on reaching Carstairs, to submit to their being placed behind a lot of three suffering from lung disease. Imagine how favourable the breeze and the proximity of those animals to spread contagion! It should be a standing rule that every cattle-truck should be washed thoroughly, and sprinkled with an antiseptic substance, before other cattle are exposed in it. There are animal poisons such as that of epizootic apthæ, which may be found to adhere to places, and spread disease with the greatest certainty.

The home trade in diseased cattle is sufficient to keep up for an indefinite period of time pleuro-pneumonia in a country like our own, but I have

specially alluded, in the *Edinburgh Veterinary Review*, to the necessity for legislation to prevent the constant importation of diseased cattle from foreign lands. In the June number for the current year, I state;—Free trade may have its disadvantages. The impetus it gave 25 years ago to the cattle trade led to the introduction of much disease on British soil, and unless some influential men will take an interest in this subject and exert themselves for the common good, we shall continue to import disease, and lose millions by such importations. In an article on pleuro-pneumonia in Holland, which appeared in our last number, and the facts of which was gleaned from a blue book, it is shown how extensively that country is swept by cattle-plagues, whence we chiefly obtain foreign store cattle for our dairies or for feeding purposes. If our imports of live cattle vary from 30,000 to 60,000 per annum, it is evident that there is a wide field for the contamination of our home stock, and this is facilitated 1stly, By the wants of the country throughout its whole length and breadth; 2ndly, By the totally unchecked trade in diseased animals; 3rdly, By the absence of all proper means to detect and counteract disease. If thousands of men were landed from countries infected by yellow fever or other pestilence, and systematically communicated these amongst us, vigorous efforts would soon be made, and even quarantine enforced for our own protection; but we observe precisely such an occurrence as affecting our cattle, and as the country is wealthy enough not to be destroyed by it, the loss is tolerated, and no attention paid to the consequences of a most pernicious traffic.

Free trade is surely not incompatible with an enlightened inquiry as to the countries which are clear of cattle-plagues, and those that are suffering from them. We need not court a trade with that part above all others in Europe, which is overrun with pleuro-pneumonia, and as fat cattle ready to slaughter are needed by us more than lean cattle and cows, which we can breed in such enormous numbers, and better than our neighbours, we do not see why some restrictions on the importation of cattle to be exposed amongst healthy stock here, should not be enforced.

Can a Member not be found in Parliament to move in this matter? The subject is worthy the most anxious and careful study. It has been well proved that epizootics, like epidemics, disappear if permitted to do so, and if they are not encouraged by facilitating contagion, &c. It is also easily demonstrated that the United Kingdom is naturally the most healthy portion of Europe, and in which cattle plagues are only seen as the result of importation. The very diseases which prove so destructive now visited us last century, but trade was not so active, importations were few, and the disorders disappeared.

The veterinary profession in this country has



not hitherto turned its attention to the great questions which affect our national prosperity, and which are purely veterinary in their nature. We must do more than learn how to physic, blister, and operate; we must study prevention. This is the great field for future workers and for men of science, trained to the investigation of laws governing health and disease.

### Veterinary Progress.

The veterinary, if properly educated, would be able to teach the human surgeon much; mutual intercourse would be productive of mutual benefit. It must, moreover, not be forgotten that in the study of physiology, the facilities of experimenting on the brute creation have ever caused human physiologists to engage in the comparative study of animals; and the astonishing fact is that veterinarians have not yet appropriated the stores of learning, which lies interspersed in treatises on the functions of man. There is a very satisfactory explanation of all this, in the fact that observations on the functions of animals and experiments on brutes have only been made and performed with a view to illustrate the physiology of man, and thereby the details of experiments, which were irrelevant in researches so planned, have been lost sight of. Men have generalised boldly, only knowing a limited number of incomplete facts; and it will only be when veterinarians will work seriously at physiology that certain questions, even respecting the functions of man, can be settled. But, though much remains to be done, it is comforting to reflect that Hering, Colin, Chauveau, Gurli, Hertwig, Ercolani, Vellar and a few others, have done enough to render veterinary physiologists renowned; and they prove that the means in our profession for such study are inexhaustible and unrivalled.

History reveals the tardiness with which medicine in general has progressed, especially as compared with other sciences: it reveals, moreover, that it was only after such men as Galileo, Newton, and Bacon had lived and created an experimental philosophy, and taught us a system of induction of facts to displace conjectural or hypothetical argument, that all sciences of experiment and observation followed the right path of progress and extension.

We have expressed a belief, which it will not be out of place to reiterate, that it is possible, by increase in learning, to raise our profession in public esteem, by enabling, through a proper system of education, its individual members to confer upon the community a larger share of substantial advantage than has hitherto been practicable, and by enabling them to hold a higher intellectual standing. We fancy we hear an indiscreet section of practical men depreciate this proposition of increased intellectual culture, and scoff at the statement that practical utility

can be enhanced in proportion with engagement in appropriate studious pursuits. But the epoch we live in is singularly prolific in facts and arguments to confute these absurd and impotent sneers, which would never have had utterance had their authors possessed the will and ability to attain meritorious distinction. Reflect an instant on the heroes whose noble blood this terrible war has spilt. All that carnage the superficial observer may attribute to the aroused passions of impetuous warriors—to the strong sinew of their herculean arms; but these are agents, secondary to the intellectual workings which, through a long course of training, and the application of the highest branches of science, have been made to influence the movements of each individual soldier to rule the course of each bullet. Even murderous warfare is successful in direct proportion as its operations are guided by well-trained minds.

The first step now is to thoroughly educate the youthful veterinarian, and afford him every facility for acquiring knowledge—to effect which object a strict observance of the rules for the regulation of the Veterinary College is necessary.—*The Field*.

### Miscellaneous.

#### The Dainties of our Ancestors.

Taste, indeed, was more capricious than refined, and the epicure exulting over strong flavours included cetacea among his Friday fare. The whale was eaten by the Saxons; and when men were lucky enough to get it, it appeared at table late in the fifteenth century. In 1246 Henry III. directed the sheriffs of London to purchase one hundred pieces of whale for his table. Whales found on the coast were the perquisites of royalty; they were cut up and sent to the king's kitchen carts. Edward II. gave a reward of twenty shillings to three mariners who had caught a whale near London bridge. Those found on the banks of the Thames were claimed by the Lord Mayor, and added to the civic feast. Pieces of whale were often purchased in the thirteenth century for the table of the Countess of Leicester. England was supplied with this choice dainty by the fishermen of Normandy, who made it an important article of commerce. The Normans had various ways of cooking it; sometimes it was roasted, and brought to the table on a spit; but the usual way is to boil it, and serve it up with peas; epicures looked out for a slice from the tongue or the tail. The grampus, or sea-wolf, was also highly esteemed; but of all the blubber-dainties the porpoise was deemed the most savoury. The Saxons called it sea-swine, and the ecclesiastics of the middle ages *porco marino*. Porpoises were purchased for the table of Henry

III. in 1246 ; and Bishop Swinfield, in the same century, dined off it whenever he had an opportunity ; it was served up at a sumptuous entertainment given to Richard II. at Durham House and at the grand installation of Archbishop Neville, in 1846, four porpoises were on the table. In 1491 the bailiffs of Yarmouth sent a fine porpoise as a present to Lord Oxford, whose favour they were anxious to propitiate, and accompanied it with the message that if they had any other "deyntes to do him a pleasir," they would have sent them also. The worthy bailiffs could find no more savoury present in all the fish-markets in Yarmouth. At the marriage of Henry V., the guests were treated with "roastid perpes," a dish fashionable in the fifteenth century. We find it again at the first course at the coronation of Henry VII. The king was probably fond of this dish, for it was served up at his table on the feast-day of St. George, and my lord cardinal courted his Majesty's favour by sending a fine porpoise to the palace. The cooks not only roasted and boiled it, but made it into pies and pasties; and a learned "Maister Coke" gives a receipt for a delicious "puddying of porpasse," whilst another tells us how to serve it up in fermenty; the wheat was to be seethed in milk, in which finely chopped almonds had been boiled to thicken it; the porpoise was to be dished up smothered in this delicate sauce, which was also coloured with saffron. A poet in 1452 gives directions how to carve "salte porpyesse and seele." In the "Boke of Kerving," mustard is recommended as the best sauce for porpoise, which was to be carved after the manner of venison; and the proper term to employ in asking the carver to help the guests, was to bid him "undertraunche that purpos." This coarse animal was esteemed as food until late in the sixteenth century; it was often on the table of Henry the VIII.; and Wolsey, Somerset, and other lords of the Star Chamber, having in 1509 a snug little official dinner together, feasted sumptuously off a porpoise which cost eight shillings. Even Queen Elizabeth, who was rather choice in her appetite, had porpoise among her Friday diet; and it was sold as food in the market of Newcastle, as late as 1575, from which time it appears to have fallen into disrepute.—*Our English Homes.*

THE DISCOVERIES OF GRAVITATION.—We may further mention that Sir Isaac Newton largely availed himself of Herrox's suggestions to explain the general principles of perturbation, as laid down in the 66th proposition in the first book of the *Principia*. These improvements are so substantial that there is no difficulty in ascertaining the author to whom they are to be assigned. They stand out as a landmark in the history of the science. Taken in connexion with his comments upon the subject of planetary motion, they prove that Horrox holds a prominent position amongst those who have succeeded in

developing that great principle by which creation is held together. Few men are permitted to originate, to confirm, and to promulgate a great discovery. This is usually the work of successive generations. Each master spirit pushes the enterprise a step further; and hence it is often difficult to decide who is fairly entitled to the credit. The final elucidation may be the result of an accumulated experience. The ground is first broken up, then the seed is sown the tender plants are trained, and it grows and thrives, until some one more fortunate than the rest gathers the fruit. So it was with the principle of gravitation, the discovery of which cannot be wholly attributable to one man. It was no doubt, reserved for the transcendent genius of Newton fully to define and to apply it; but the existence of such a power was known to others who came before him; and their ideas respecting it formed part of the data from which he drew his sublime conclusions. Thus Kepler had considerable knowledge of the subject, and many of his conjectures have been substantiated. Dr. Gilbert published similar doctrines in this country, and gave them a more extended application. But Horrox, by his explanation of the perturbative influence of the sun, and by his illustration of celestial and projectile motion, unfolded the theory more completely than any of his predecessors. He seems to have perfectly understood the identity and universality of this unseen power; for he often tells us that the planets in their orbits are affected by it in the same manner as bodies upon the surface of the earth. His accurate views were at length adopted by Newton, and made the foundation of his philosophy.—*Memoir of Jeremiah Horrox*

GREEN, OR ARSENICAL PAPER HANGINGS.—Doctor George Selwyn Morris, of Guisbro', writes, as follows, to the *Leeds Mercury*: "Now that the season is approaching when many persons paper and re-paper their rooms may I be allowed to advise that they should never use green paper, on account of the great quantity of *arsenic* which it contains? From experience, as well as from what I have proved by testing green paper, I am convinced of its pernicious effect upon the system of *some people*. For more than four months my own children were suffering from irritable stomach, irritation of the bowels, loss of appetite, and a deadly paleness of countenance. I was dosing, and doubly dosing, and yet could not conceive the reason why they did not recover, the place being healthy, and the water good which they drank. At last it struck me that the green paper in the room in which they slept had something to do with it. I went up stairs and pulled down all the green paper, and from that day they have never required a single dose of medicine, and now, instead of pale faces, they have rosy cheeks."



**LABELS.**—A cheap and durable label is a great desideratum. There are some good patent labels, but their cost prevents their general use; besides this, many of them must be purchased with the name already on them. If these points are no objection, Bliss' labels possess the other requisites to a considerable degree. A zinc label, written on with prepared ink, is both good and durable. It will last for many years when the ink is good. But the cheapest and most durable label of all is thin sheet lead; it will last an indefinite length of time. It is cut into narrow strips, about three inches long, stamped with a steel die, and rolled around a small branch of the tree to be labeled. It is most convenient to use figures and a memorandum book, in which the names are put down opposite the figures. A wooden label well painted, and written upon while the paint is fresh, will last a considerable time; so also a wooden label, if *wetted*, may be

written upon with Dunn's pencil, and relied upon for two years at least; but wood in any form cannot be regarded as a durable material.—*Horticultur*

**DRY FOOD FOR HOGS.**—A correspondent of the *Country Gentleman* says: "Many hogs are kept comparatively poor by the high dilution of their food. They take in so much water that there is not room for a good supply of nutriment. Hence the reason that those farmers who carefully feed *undiluted* sour milk to their hogs have so much finer animals than those who give them *slop*. The hog has not room for much water; and if food which contains much is fed to him, it makes him big-bellied, but poor." Hogs, as well as all other animals should be allowed all the water they will drink, but it should not be mixed with their food in excessive quantity.



## DUTCH FLOWER ROOTS.

**THE SUBSCRIBERS BEG TO ANNOUNCE** that they have just received their annual importation of Bulbs in good condition—consisting of *Double* and *Single Hyacinths*, \$1.00, \$2.00, and \$3.00 per dozen. A fine assortment of *Tulips*, from 50 cents to \$2.00 per dozen. *Crocus*, 12 to 20 cents per dozen, and at \$1.00 and \$1.50 per 100. *Polyanthus*, *Narcissus*, 12 to

15 cents each.

Descriptive Catalogues furnished gratis on application. They would also call attention to their fine stock of English Hyacinth Bottles, with supports, suitable for growing Hyacinths in winter, and for holding parlour bouquets in summer. (See above cut)

**JAMES FLEMING, & Co.,**

Seedsman and Florists, Corner of Yonge and Queen Streets, Toronto.

Toronto, Oct. 27th, 1862.

**Horse Infirmary and Veterinary Establishment Corner of Bay and Temperance Streets Toronto, C. W.**

A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

And also begs to announce that Veterinary Medicines of every description are constantly kept on hand:—Such as, Physic, Diuretic, Cough Cordial, Tonic Condition, and Worm Balls and Powders. The constituents composing the Cough-balls, have been found (by Professor Dick, of Edinburgh) most serviceable in alleviating many of the symptoms of Broken-wind or Heaves in Horses. Colic Draughts, &c., a mixture which owners of Horses should always have beside them.

Liniments for Sore-throat, Sprain, Curb, Spavin, Ringbone.

Blistering Ointments. Liquid and sweating Blisters.

*Horses bought and sold on commission.*

Toronto, Aug. 30th, 1862.

THE

**JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,**

**FOR UPPER CANADA,**

**Is Published on the first of every Month,**

AT \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**FOR SALE!**

**Avrshire Cattle, Leicester Sheep, and  
Berkshire Pigs.**

THE Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Specimens from his *Prize Herd* will be on Exhibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.

Aug. 30th, 1862.

6-mos.

**Contents of this Number.**

|                                          | PAGE. |
|------------------------------------------|-------|
| Excrements of Poultry as Manure.....     | 673   |
| Vice, versus Labour .....                | 674   |
| Application of Chemistry to Agriculture. | 676   |
| The Scottish Highlands.....              | 679   |
| The Long Woolled Sheep of Tweedside..    | 681   |
| Sewage Irrigation .....                  | 685   |
| Sir E. B. Lytton on Agriculture.....     | 688   |
| Lake Superior Region.....                | 689   |
| Commercial Value of Artificial Manures.  | 690   |

**AGRICULTURAL INTELLIGENCE :**

|                                 |     |
|---------------------------------|-----|
| Thorndale Short Horn Blood..... | 692 |
|---------------------------------|-----|

**HORTICULTURAL :**

|                                                  |     |
|--------------------------------------------------|-----|
| Fruit Grower's Association of Upper Canada ..... | 693 |
| Remarks on Planting Fruit Trees.....             | 695 |
| Peterboro' Horticultural Society .....           | 697 |

**THE DAIRY :**

|                                 |     |
|---------------------------------|-----|
| Josiah Quincey's Milk Farm..... | 698 |
|---------------------------------|-----|

**VETERINARY DEPARTMENT :**

|                                  |     |
|----------------------------------|-----|
| Prevention Better than Cure..... | 699 |
| Veterinary Progress .....        | 701 |

**MISCELLANEOUS :**

|                                                            |     |
|------------------------------------------------------------|-----|
| The Dainties of our Ancestors .....                        | 701 |
| The Discoveries of Gravitation. Green Paper Hangings... .. | 702 |
| Labels, Dry Food for Hogs.....                             | 703 |

**EDITORIAL NOTICES :**

**Pure Bred Stock for Sale.**

**AYRSHIRE BULLS**, Calves, and Heifers; Improved Berkshire Pigs, and Leicester and Cotswold Rams.

R L. DENISON,

*Dover Court, Lippincott P. O.*

**The Agriculturist,**

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.



THE  
Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, DECEMBER 1, 1862.

No. 23.

**Agricultural and Veterinary Institution.**

It will be seen from an advertisement on our last page, that a class is about to be formed in this city, for the encouragement among our young farmers of the study of Agriculture in its scientific and practical relations, and of the Veterinary art, in reference to the Anatomy, Physiology, Diseases and their modes of treatment of farm animals. The latter will comprise the history of the different races, and the principles of breeding, with appropriate illustrations. Mr. Smith is familiar with the most approved methods of treating in Europe, being himself a licenciate of the old Veterinary College of Edinburgh, where he attained a high standing, and will study to adapt his instructions to the capacity and special wants of his students, who will have additional opportunities of facilitating their studies by engaging in dissecting and the use of instruments.

In the department of Agriculture, Professor Buckland will receive valuable assistance from several of his colleagues in University College, in Chemistry, Geology, Botany, Entomology, and other branches of Natural History, all of which have important bearings both on the theory and practice of Agriculture. The composition of soils, plants and animals, will be as fully treated of as the time will admit, with descriptions of the most approved implements and machines, and the principles

on which they act. Manures, their composition and modes of action; rotation of crops, and a description of the various products of the farm, and their comparative value; the alteration and construction of Farm Buildings, the laying-out of fields, fencing, road-making, fruit and ornamental planting, will also receive attention.

The chief design of these lectures is to point out to young men actually engaged in farming, who have not had the means or opportunity of making themselves acquainted with the scientific principles on which the agricultural art is based, *the cheapest and readiest way of acquiring this knowledge.* With this great end in view the pupils will be fully instructed how to read and study the best treatises on the various subjects that will come under their consideration, and to form a correct habit of observing, recording, and applying the agricultural phenomena of daily life. As the successful prosecution of agriculture, as a business, greatly depends on a correct and vigilant habit of every-day observation, the opening of the eye and the exercise of the reason and judgment on the changes that occur in nature, and in the markets of commerce, great pains will be taken to develop these qualities in the class, *and to prepare young men to think, study, and observe for themselves.* It being intended to form a class of this character every winter, its studies will as far as possible be made complete in one

term; but in case of students presenting themselves a second time, facilities will be afforded for carrying out their studies and investigations to a wider extent.

In the Veterinary department the instruction will proceed from rudimentary principles to their application in practice; and the main object aimed at is to enable young men to acquire a correct general knowledge of the structure and physiology of the domesticated animals, and of the most approved methods of treating ordinary diseases, an acquisition in itself of no mean practical value. The pecuniary loss to farmers, every year, from a want of this kind and degree of knowledge and skill, is much greater than is generally imagined. Mr. Smith is open, we believe,—to receive *professional* pupils,—such as intend to follow the Veterinary art as a means of livelihood: and one of the chief objects of the Board of Agriculture in originating this movement is the hope of establishing ultimately, in this section of the Province, a regularly organised Veterinary School, in which the various branches will be thoroughly and *professionally* taught by a complete staff of Professors. This, however, must be a work of time. As the live stock of the country has been of late years rapidly increasing, both in amount and quality, and consequently in money value, the proper understanding and treatment of disease is daily becoming a matter of greater moment. Hence the necessity of making a commencement in this direction.

As the introduction to the class, to which we have now drawn attention, will be gratuitous, and no further expense to pupils need be incurred beyond that for board for a week at the most leisure period of the year, it is hoped that a goodly number of young men, desirous of self-improvement, from different sections of the Province, will present themselves on the approaching occasion. Let none keep back from a supposed deficiency in preliminary qualifications; an ordinary English education is all that is really required. The principal requisite is *a desire to learn*. No kind of examination will be required either on entering or leaving the class. But to such as may be disposed to pass an examination in

all the subjects at the end of the term, prizes in books will be awarded in accordance to the proficiency attained. We like the idea of these prizes much; they will tend to stimulate study and a healthful rivalry among the pupils, and those who are successful will take with them into the country some of the best books relating to their pursuits, that will for a long time to come benefit both themselves and neighbors. Such young men will in time become rural missionaries in their respective localities, and infuse around them a desire for knowledge—and agricultural improvement.

### Ice-Houses.

WRITTEN FOR THE AGRICULTURIST.—The best time for building ice-houses being now at hand, and as it is not generally known that with a little additional expense, an ice-house can be constructed so as to answer the double purpose of keeping ice, and preserving milk, butter, &c., I will give your readers a description of one, which I built in the Fall of 1859, with a preserving chamber for this purpose.

Ice can be kept in large quantities during the whole summer season in houses built entirely above ground; but where it is desired to have a preserving chamber, and to insure a sufficiently low degree of temperature to attain good results, it is indispensably necessary that the earth should be banked up to the height of several feet against the outside of the building. In constructing my ice-house, I took the advantage of a convenient and descending spot, sunk a pit fifteen by eighteen, and from 4 to 5 feet deep; walled it up to the height of 9 feet, banked the earth up to the top of the wall all around, except a space for the doorway; upon the wall I put a frame 6 feet high which gives a height inside from the bottom to the comb of the roof of over 20 feet. I put in heavy sills in the bottom, except in a space 4 feet square for the preserving chamber. Upon the sills, I put a floor of two inch oak plank, and on the top of this a floor of one inch pine jointed closely. The floor has a descent of two inches towards the preserving chamber, and it conducts the waste water from the ice to this chamber. I put in an inside frame, and lined it inside; this left a space of six inches between the lining and the wall to fill in with sawdust, and the partition between the ice and preserving chamber is also double, and filled in with sawdust well-packed.

To complete the preserving chamber, I first put in clean sand to the depth of four inches, then paved it with medium burned bricks, they



being preferable to hard, on account of their capacity to absorb and retain a large amount of water. Pains were taken to have the floor exactly level in the one direction, and also very tight, so that all the waste water from the ice shall be conducted to and distributed regularly upon the bricks. This keeps them so constantly cold as to preserve milk, during the hottest season for from thirty-three to thirty-six hours, perfectly sweet, and butter very hard. One valuable feature belonging to this mode of preserving milk and butter is, that during the warmest weather of summer season, when cold sweet milk and butter of a degree of solidity equal to that of the winter season is appreciated as one of our greatest luxuries, we can have it so, from the simple fact that at that particular time the supply of the cold ice water is greatest.

Butter made and kept in this way does not become as soon soft after being brought to the table as that which has been kept in a spring of water, nor do thunderstorms appear to hasten the development of lactic acid. We have noticed no perceptible difference in the length of time which the milk has remained sweet in regard to clear or stormy weather. I have observed at different times, by placing the thermometer within one foot of the bricks in the preserving chamber, that the temperature was about 54 degrees, while it was 95 in the shade outside. The sand underneath the bricks subserves an important purpose, by retaining the water, and supplying it to the bricks by capillary attraction at such time, as there is not a great supply coming from the ice.

The space above the preserving chamber should be opened and unobstructed to the roof, and over the ice there should be good ventilation to the roof, to carry off all the vapour which may arise from the milk.

An ice-house constructed in this manner is one of the best investments for a farmer, for besides securing the luxury of preserving milk and butter cool, vegetables of different kinds may be preserved fresh until a succeeding crop grows. I kept one year's beets good during the following summer; also cabbages. These latter I laid upon the ice, which imparted to them a crispy sweetness, perfectly delightful in the very warm weather of June. Vegetables may also be preserved in this manner by farmers, so as to bring them fresh to the market in early summer.

### Destruction of the Wireworm, &c.

To the Editor of the *Agriculturist*.

SH—As you and your correspondent, AGRICOLA, invite the readers of the *Agriculturist* to give an opinion as to the best mode of destroying the wire-worm, I take the liberty of submitting a few observations, the result of some ex-

perience and long observation on that and some other matters connected with Agriculture. I confess being startled at the communication of your correspondent, as I was not aware of the existence of those destructive pests to the extent Agricola complains of, in any locality of this township. I believe there is at least one infallible remedy for this evil, but unfortunately it is unattainable in most parts of Canada. On the Yorkshire wolds and in Lincolnshire, when old pastures and extensive sheep walks were brought into cultivation, the first, second and perhaps third crops did pretty well, afterwards, the turnips and grain crops were often destroyed, especially on deepish soil, to a considerable extent by the wire-worm and grubs. However the farmers discovered that by giving the land a thorough covering with calcareous marl or lime stone, dug out of pits made in the fields where the evil existed, they effectually got rid of the mischief, and abundant crops of both roots and grain were afterwards a certain result. Some farmers preferred giving the land affected a good dose of quick lime, as the labour was much less than marling or chalking. They also imagined that a profit was sooner realized, in consequence of the quicker fertilizing effects of the lime. But there are but few sections in Canada that will allow of such a practice, and I know of no such a situation in this township that will admit of it. I therefore respectfully suggest to your correspondent a mode of management which, if he thinks worth his while to adopt the principle, will, I sincerely believe, materially lessen, if not rid him altogether of, the grievous evil. I would recommend him to commence by having at least one fifth of his tillage land a naked fallow, and have that thoroughly plowed deep in the preceding fall; as soon as possible after the spring seeding is over and when the land is dry enough, to have the fallow well harrowed, and immediately after thoroughly cultivated as deep as the best implement will allow of, then by a diligent use of harrows and perhaps an iron toothed horse-rake, carefully collect all the weeds, roots of weeds, &c., into heaps and burn them; by so doing an immense number of worms, larvae and ova will be effectually destroyed. When that is accomplished, if from thirty to fifty bushels of quick-lime is carefully distributed over the fallow, and then cross-plowed, harrowed and gone over with a heavy roller to compress and consolidate the ground, thereby retaining the causticity of the lime longer in the land, the lime will be of immense benefit not only by destroying the worms, &c., by virtue of its causticity, but as a fertilizer and by its chemical action on the organic materials of the soil, rendering them more soluble as food for vegetation. It will be well now, to let the land remain three or four weeks undisturbed, then if it should be weedy, the use of the plow or cultivator, or it may be both, will be needed again. After

which, it may be presumed the land will be in proper condition for receiving the dung, prior to ridging up for sowing fall wheat, or, as *Agricola* suggests, allowing a portion to remain for spring wheat.

It is, perhaps, unnecessary to observe that lime and dung should never be applied together, as the fertilizing properties of dung are in a great measure dissipated by the chemical action of quick-lime. The year following, after harvest as soon as other work on the farm will admit of it, it is advisable to plow in the wheat stubble, a portion of which, say half or more, may with propriety be sown with pease in the spring. It is an approved practice to put the pease in with a drill, leaving an interval of twelve or fifteen inches between the rows, to allow of the effectual use of the hoe for the extirpation of thistles and other weeds during the growth of the crop. The remainder of the land, to be appropriated for growing potatoes and other roots. I may observe that the wire-worm and other grubs will occasionally destroy white turnips during the early stage of their growth, but it is a singular fact that those pests will not molest potatoes or Swede turnips (*Ruta Baga*). In my humble opinion grounded on experience of a few years in Canada, the best time for sowing Swede turnips is from the 15th to about the 25th of June. I may say by doing so, I have invariably succeeded in obtaining a crop, and never had to sow the seed a second time in the same season. It is absolutely necessary to have the land in good condition, cleared of all weeds and rubbish, and well pulverized by cultivation. A two rowed seed and manure drill is the best for putting in turnip seed with manure on slight ridges with an interval of about twenty four inches between each,—an excellent composition to drill with the seed, may be prepared of eight bushels of bone dust or half inches, one bushel of salt and eight or nine bushels of ashes to each acre, to be well mixed and screened, to be sufficiently dry when used so as not to interrupt the working of the drill. The fertilizing and alterative properties of this manure, will endure beyond the turnip crop and greatly benefit the succeeding crops. As soon as the plants are in rough leaf, the intervals ought to be well horse-hoed, just before the plants in the rows are thinned out, and kept quite clear of weeds by the horse and hand hoes during the after stages of their growth. The next crop in succession may be spring wheat or barley, with grass seeds of clover and timothy. If the pea and root land has been plowed in the fall, which is the best practice, it will be necessary prior to sowing the grain in the spring, to harrow and then go over it with the cultivator, to make proper channels for the reception of the seed. It perhaps would not be expedient under the circumstance of *Agricola's* farm having the wire-worm, to let it remain longer than one year in

grass; it may then be plowed early in the spring following and sown with oats, which will end the rotation. I am led to believe if your correspondent adopt this or some similar rotation of cropping, he will much mitigate the great evil he complains of, and by diligently weeding thistles and other pernicious weeds, out of all his crops daring their growth, the result of his farming will be both profitable and pleasant to him. To sustain the fertility of the land, it is imperative to collect and take care of all the manure the farm produces. To avoid much of the waste caused by the spring floods washing away the juices of the manure in the barn yard, I deem it advisable to clear the yards as much as possible in February, and pile the dung in tolerably large heaps in the fields where it will be wanted. What liquids flow from the piles during the progress of decomposition are by this plan retained on the land. It occurs to me that the manure would probably benefit the fall wheat most, in the above rotation, and secure a better quality and perhaps more grain, if it could be spread on the sod prior to plowing for the oat crop. It would then become thoroughly incorporated with the soil in the process of fallowing for wheat. Practical and observant agriculturists held that raw manure to a wheat crop encourages too much the growth of straw and makes it more subject to mildew and rust, thus deteriorating the grain. EBORENSIS.

Chinguacousy, Nov. 21st, 1862.

[We are obliged to our correspondent for his valuable contribution, from which *Agricola* and our readers generally may gather useful suggestions. We shall be happy to hear from him again on the results of his agricultural observation and experience.—Ed.]

### Transplanting Trees—Old Notions.

On looking over old recommendations and old practices, it must be admitted that the art of transplanting and managing fruit trees has made a great advancement. It is not beyond the memory of old men, that the recommendation was common to sow oats and plant potatoes in the holes in which newly set trees were placed—the reasons given were the loosening of the soil and shading of the surface. Others held the roots to their places by piling stones upon them. Others again, thought the best thing they could do was to fill the hole with fresh manure, or at least two or three inches of fresh manure directly in contact with the roots. We have seen an orchard of 300 peach trees set out in a clover meadow, without any further care, and where nearly all died the first year. Ten years ago, we inquired of a tree agent of close observation, and who had effected extensive sales of dwarf pears, what proportion of these trees were properly cared for, so as to prove successful and bear crops? His answer was



"not more than one in a hundred—all the rest are thrust out into hard or grass ground, or entirely neglected in culture, or never pruned."

We shall have enough bad treatment; but the number who know what good management is, and who practice it, has increased greatly within the last ten years. Many have learned that oats, potatoes, grass, or any kind of weeds, growing about a young tree, however much they may shade the surface, carry off the moisture from the soil, and exhaust its fertility, many times more rapidly than a simple exposure of the bare and mellow surface of the ground—and that when there cannot be a mulching of this surface by mellow soil, a coating of *dead* vegetable matter is the only thing admissible. Many, after killing whole orchards by placing fresh manure on the roots, have discovered that fine rich mellow earth, is the best thing to be placed in contact.

Agricultural papers have done much towards effecting the improvement that has been made; and nurserymen, who are aware that those who lose trees will not be likely to purchase again, and that the best way to effect sales is for their customers to enjoy fine delicious crops, have accomplished much by their assiduous labors. But in riding through the country, and observing how many young orchards still stand in grass or in neglected fields, we see the continued necessity of urging on the recommendations for better management, and now that the season for autumn transplanting is approaching, we trust that all who desire success, will resolve that the trees they buy these hard times, shall be well set out, and more especially thoroughly cultivated.—*Cultivator*.

#### EXPERIMENT TRIED WITH DISEASED POTATOES.

On taking up a crop of potatoes in the first week of October last year (1861, I found that three parts of them were very badly affected with disease—indeed so much so, that they were too bad even for the food of the pigs. I was induced to try with them an experiment on a small scale, which was done as follows:—On the day following that on which they were dug, I had a piece of ground (60 feet wide by 112 feet long) dug up to the depth of 14 inches; the drills were opened at a distance of 2 feet drill from drill; then the diseased tubers were planted whole, at a distance of 3 inches, set from set, in the drill; a good dusting of newly slacked lime was spread over all the sets in each drill; and they were then covered over with soil to the depth of 7 inches. Nothing more was done to said piece of ground until this spring, when, to my agreeable surprise, the plants made their appearance above the surface, with scarcely a blank over the whole piece. The ground was then forked over between the drills to the depth of 10 inches, so as to loosen thoroughly the soil, and nothing more was done beyond once drawing a little soil to the plants,

and keeping the ground clear of weeds, until the 17th of last July, on which day I commenced taking up the potatoes for use, and, to my astonishment, I found a crop such as I never before have witnessed since the disease first attacked potatoes in this country; for they not only were most prolific, but of an unusually large size, and up to the present date (August 26) I have not found one tuber affected by the disease.—JOHN DAVIES, Gardner to Sir C. H. Coote Ballyfin House, Mountrath, Queen's County.—*Field*.

#### On the Construction of Piggeries.

We take the following useful suggestions on the best methods of constructing piggeries from a treatise on the Hog, recently published by C. M. Saxon, Barker, & Co., New York. Too little attention is paid to these matters by farmers in general. No animal pays better for good feeding and proper care than the pig:—

There are few things more conducive to the thriving and well-being of swine than airy, spacious, well-constructed styes, and, above all, cleanliness. The old prejudices—that any place was good enough to keep a pig in, and that filth and pig-styes were synonymous terms—are now passed away, and the necessity of attention to this branch of porcine economy generally recognized.

Formerly swine were too often housed in damp, dirty, close, imperfectly built sheds, this was an error, and a fruitful source of disease, and of unthrifty animals.

In large establishments where numerous pigs are kept, there should be divisions appropriated to all the different kind of pigs; the males, the breeding sows, the newly weaned, and the fattening pigs should all be kept separate; and it were as well that in the divisions appropriated to the second and last of these four classes, there should be a distinct apartment for each animal, all opening into a yard or enclosure of limited extent. As pigs require warmth, these buildings should face the south, and be kept weather-tight and well drained. Good ventilation is also important, for it is needless to expect animals to make good flesh and retain their health unless they have a sufficiency of pure air. The blood requires it to give it vitality and free it from impurities, as much as the stomach requires wholesome and strengthening food, and when it has it not, becomes vitiated, and impairs all the animal functions.

"The blood, the fountain whence the spirits flow,  
The generous stream that waters every part,  
The motion, vigor, and warm life conveys,  
To every moving, breathing particle."

becomes contaminated by those aerial poisons given out by the decaying vegetable matter, rotten or damp litter, accumulations of dung, and animal exhalations engendered by ill-ventilated styes.—These noxious gases are inhaled by the skin, until they enter the circulation, and impair its vivifying fluid. It is by the action of the atmospheric air that venous blood is converted into arterial, freed from all its impurities, and rendered fit to sustain all the vital functions; hence it must be at once evident that if this important agent is in the first place contaminated, its action must be impaired and its effects empoisoned. Besides, bad smells and exhalations injure the flavor of the meat.

Damp and cold floors should also be guarded against, as they tend to induce cramp and diarrhoea; and the roof so contrived as to carry off the wet from the pigs.

The walls of a well-constructed sty should be of solid masonry; the roof sloping, and furnished with spouts to carry off the rain? and floors either slightly inclined toward a gutter made to carry off the rain, or else raised from the ground on beams or joists, and perforated so that all urine and moisture shall drain off. Bricks and tiles are much used for the flooring of styes, but are objectionable, because, however well covered with litter, they still strike cold; wood is far superior in this respect; as well as because it admits of those clefts or perforations being made which we have just recommended, and which not only serve to drain off all moisture, but admit fresh air as well. The value of the litter and dung as manure, must always be borne in mind, and all things so arranged that none of it shall be wasted.

The door of each sty ought to be so hung that it will open inwards or outwards, so as to give the animals free ingress and egress; and to do this it should be hung across from side to side, and the animal push it up to effect its entry or exit: for if it were hung in the usual way it would derange the litter every time it opened inwards, and be very liable to hitch. If it is not intended that the pigs shall leave their sty, there should be an upper and lower door, the former of which should always be left open when the weather is warm and dry, while the latter will serve to confine the animal.

There should also be windows or slides which can be opened or closed at will, to give admission to the fresh air, or exclude rain or cold.

Mr. Henderson's descriptions of the styes is more lucid and practical than mere vague directions, we will therefore give it in his own words:—"The plan which I recommend is as follows. Have a house thirty feet by fifteen, with four doors all opening outwards, and three partition walls through the house, viz., a wall between each of the doors, dividing the house into four compartments. The two middle ones I use for eating-rooms, and the other for sleeping-apartments, having an inner door between each eating and sleeping-apartments.

"The following is the most convenient manger for their food. Let it be as long as the house is wide, and fixed against the middle wall; in form similar to a horse manger, but not so deep, and must be divided into twelve divisions by partition bands four feet in length or height, and a little broader than the manger is wide; thus a number will feed as well and as quietly together as two or three. Before every meal the trough should be well washed and the place swept, and once in the day a little fresh litter placed in the sleeping chambers. Each of these sleeping, and eating rooms may be temporarily divided into two, if necessary. The sleeping rooms should be dark, as animals fatten much more rapidly when they lie down and sleep after each meal than they do when they wander about. There should be a square yard to each piggery; well paved and drained, as should the styes also be; and where it is possible, an enclosure or a small piece of ground adjoining is exceedingly useful."

Those who have space to admit of it will find it advantageous to have five apartments instead of four, and in the fifth or central one to have a boiler to prepare the food, and chests and lockers to contain the various stores."

Parkinson advises that in the yard or enclosure before every piggery should be a "rubbing post or what is still more beneficial, two posts having a pole between them similar to a horse's leaping bar, but not revolving; this pole should be raised or let down to the height of the pigs, as the rubbing of the animals against it causes a freer circulation of blood, the same as the flesh-brush does to human bodies."

In all large establishments there should be a proper apparatus for cooking, mixing, and preserving the food. For this a boiler and steamer will be requisite, and some two or three tanks which may be made of bricks plastered over on the interior to prevent leakage, and fixed in the ground. Wherever it can be managed, troughs should be so situated that they can be filled and cleaned from the exterior without interfering with or disturbing the animals at all, and for this purpose, the following very simple contrivance has been recommended: "Having a flap or door with swinging hinges made to hang horizontally over the trough, so that it can be moved to and fro, and alternately be fastened by a bolt to the inside and outside of a manger. When the hogs have fed sufficiently, the door is swung inwards and fastened, and so remains until feeding-time, when the trough is cleaned and refilled without any trouble, and the flap drawn back and the animals admitted to their food." Some persons cover the trough with a lid having as many holes in it as there are pigs to eat from it. This is by no means a bad plan, for then each pig selects his own hole and eats away without interfering with or incommoding his neighbor.

We are indebted to the kindness of a friend



for the following account of the Royal piggery, at the Home Farm at Windsor. It consists of slated sheds, of sufficient length and breadth to contain about two dozen styes, of somewhat larger dimensions than ordinary pig-styes, and arranged in two rows with a broad walk between them, from which the spectator looks into the styes on the right and left of him. Each sty has an in-door and an out-door apartment, the former having a wooden coverlid to it, going upon hinges like the lid of a corn-bin, instead of a roof, which may be raised to any height in hot or close weather, so as to admit any influx of air required, or even to be thrown back if necessary. The styes are paved with brick both within and without doors, and their floors slightly declivitous.

The following is a description of a piggery at Lascoed Pont Senny, planned and executed by Mr. J. Donaldson, land steward to A. M. Storley, Esq., Brecon, South Wales:—This piggery is constructed for the purpose of breeding and feeding on a large scale to suit a farm of six hundred acres of turnip soil in an inland situation, where convenient markets render easy both the disposal of fat and lean stock. There are seven styes at the end of the steaming house which accommodate a boar and six brood sows, which are calculated to produce yearly one hundred pigs, sixty of which will be fattened from September to April in fifteen styes, placed in two parallel rows, and made to contain two hogs in each apartment. The rest are sold as stores. The yearly rental is from £200 to £250 according to the prices of the produce. The steam food consists of potatoes and meal, with grain to finish, and is conveyed to the styes along a paved road or path, in a small four-wheeled waggon. The steamer also cooks potatoes for the working horses, and chaff for milch cows, and thus applies the original cost to several purposes, and fully employs a man. The store pigs are fed in summer with clover and vetches, and in winter with roots either raw or steamed. Water is brought to the steaming-house in a pipe from the farm yards, which are all supplied by ball-cocks from elevated casks fed by a forcing pump. A dipe underneath conveys the water from the potato-washer to the pond in the store-yard, where it passes to the yard, and then meeting with the collected moisture of the whole area of the piggery, falls through an iron grate into a paved culvert, and is conveyed to the manure pit, to which the liquid of the farmery is collected and brought by a drain; along the sides of the road are sheds opening into the store-yard. The cost of erecting a piggery like this will vary from £80 to £100, according to the price of labor and materials, and to whether the roofs be tiled or slated. The steaming-house has an upper floor to serve as a store-house for grain, meal, roots, &c.

The piggery should always be built as near to

that part of the establishment from which the chief part of provision is to come as possible, as much labour will thus be saved. If the dairy is to supply this, let it be as near as may be to that building; or if it is to come from a brewery or distillery, then let it be near to them.

Care must also be taken to preserve the dung and urine, and some place fixed in which these matters can be stored for manure. Wherever the swine are regularly and well managed, this will not be difficult, for the animals will always, if they can, lay their dung at a distance from the place where they sleep or feed. A small paved yard, somewhat sloping, and with a gutter to serve as a receptacle, will best answer the purpose, and thence it can be daily removed to the proper heap or tank.

We have been told of a gentleman who keeps only a few pigs for his own use, and has a double sty for them, by which means he is enabled to keep them exceedingly clean and sweet. Every morning the pigs are changed from one into the other so that each sty remains unoccupied for four and twenty hours, during which time it is thoroughly cleaned out, and of course becomes well aired, and free from all unpleasant smell. And well do we remember the pleasure with which we used to view the pigs and styes of an old friend of ours now no more. A door leading out of his beautiful flower-garden brought us to those equally well-tended objects of his pride. The styes are always kept whitened on the inside; the sloping floor carried off all moisture to a deep gutter running between the sty and the square-paved yard, each of which inclined towards it: a trough ever stood with water clear as crystal for them to drink, and the animals themselves were, by washing, currying, and perfect cleanliness about them, as neat and sleek as a lady's lap dog. They were, in fact, pet pigs. Nor are we without pleasurable reminiscences of delicate spare ribs, loins, and legs of pork, and delicious sucking pigs.

Washings, combings, and brushings, are valuable adjuncts in the treatment of swine; the energies of the skin are thus roused and the pores opened, consequently the healthful functions are aided, and that inertness so likely to be engendered by the lazy life of a fattening pig counteracted. We cannot close this chapter without quoting the following account of the mode of keeping pigs in Mexico:

"Fine breeds of these useful animals are kept by many persons of wealth, as an article of trade, in the city of Mexico; and the care and attention paid to their cleanliness and comfort so far exceed any thing I have seen elsewhere, that a short account may be useful by furnishing hints to our farmers, brewers, distillers, &c., by whom numbers of these valuable animals could be and are conveniently kept. The premises where the business is carried on are extensive, consisting in general of good dwelling-houses, with a shop, slaughter-house, and places for singin; the

pigs, large bowls for rendering the lard, salting and drying-rooms, and lard-rooms, with wooden bins for containing the rendered fat, which is an article of great consumption in Spanish cookery, being used as a substitute for butter. There is a soap manufactory, in which the offal fat is manufactured, and apartments where the blood is made into a kind of black-pudding, and sold to the poor. Behind all these are the styes for the hogs, generally from eight hundred to one thousand in number, which occupy a considerable range of well-built sheds about thirty feet deep, with roofs descending very low, and having the entrance through low arches, before which is an open space the whole length of the yard, and about twenty-four feet wide, in the centre of which is a kind of aqueduct built of stone, and filled with clear water from a well at the end of the premises. The hogs can only put their noses into this water through holes in the wall, which prevents their dirtying it, as it passes through the whole division of the yard. This is the only liquid given them, and their food is maize or Indian corn, slightly moistened, and scattered at stated hours on the ground, which in the yard, as well as the place where they sleep, is kept perfectly dry and clean. They are attended by Indians with every possible care. There is a cold bath on the premises, which they are obliged frequently to use, as cleanliness is considered essential to their acquiring that enormous load of fat from which the principal profit is derived. Their ease and comfort seem also in every respect to be studiously attended to; and the occupation of two Indian lads will cause a smile on the countenances of my musical readers when they are informed that they are employed from morning till night in settling any disputes or little bickerings that may arise among the happy inhabitants of this community, either in respect to rank or condition, and in singing them to sleep. The boys are chosen for the strength of their lungs, and their taste and judgment in delighting the ears and lulling the senses of this amiable harmonic society; they succeed each other in chanting during the whole day, to the great delight and gratification of their bristly audience, who seem fully to appreciate the merit of the performers."

### Training Colts Young for Special Objects.

The great importance of considerable regular exercise in the development of strength, growth, health, and their cognates, is, in one way or another pretty generally recognized and conceded. An animal cannot live without breathing; cannot breathe without a natural supply of air; and cannot get a full natural supply of air without ample exercise or locomotion. The extent to which an animal breathes depends, beyond a limited point, absolutely upon his exerting his loco-

five organs. In brief, breathing has been made by the author of nature to *depend*, in a large degree, upon exercise as a cause, basis, and motive force. The circulation of the blood generally, as well as the whole process of nutrition, depends largely upon the extent in which the motive force of exercise is brought into play. A thorough and able thinker and writer says, "Though not the sole cause of the circulation of the blood, yet it (exercise) is an indispensable condition. The contracting muscles everywhere impel the blood along its course, and without the aid of conditions established by exercise, the motion of the fluids of the body flags and stops; the outlets of the body become choked, and waste matters are not disposed of; affinity of the blood for oxygen declines, and the vital fluid remains unpurified; the stomach no longer digests food, because it is not taken away from that organ; the extremities lose their healthful temperature," &c., &c. Such are some of the reasons why circulation, nutrition, and general growth all depend upon exercise in so great a degree. I quote further very briefly. Exercise "not only determines the *amount* of food and oxygen required by the system, but is absolutely necessary in the *disposition* there made of them." Thus the formation of the muscular system of all animals most certainly depends upon exercise; and the muscular parts and powers of the horse more so than those of any other domesticated animal, because of the greater natural activity which his structure is fitted for and his health requires. Very many illustrations of the influence of exercise might be cited, as the large muscular parts and powers of negroes and other laboring men, as compared with the slender limbs and little strength of those who make their growth in in-door or inactive life. The arm of the smith and sailor show its effects on particular limbs or members, when those are used or exercised more than other parts of the system, though this has been so often referred to as to be generally admitted.

What I wish on this occasion is to show the application of the principle to a new purpose, viz., to the training of colts, and the maturing of horses for special objects or purposes. At present, so far as I am aware, nothing more than inherited qualities, and good *general* muscular training *after* colts are old enough for work, comprise about all that is depended on to insure excellence of power for any particular purpose or order of labor, as trotting, carrying, or drawing. The English race-horse, and the American trotting-horse are very regularly exercised; walked, trotted, or cantered, or all in succession, as the case may seem to require. This course strengthens the muscular system and maintains the *general* vigor or muscular power as a matter of natural consequence.

But has the principle of increasing the size and power of the muscles of any important part of the body by special treatment or exercise of



such part and for a specific object ever been tried? I have heard of no experiment of the kind so far, yet I perceive no reason why the principle is not sound; why the idea cannot be made practical. Every one has been informed of the enormous increase in the muscular power of Dr. Windship resulting from special training, as is equally well known with facts before alluded to.

Though there be an increase of general muscular growth and power, in animals and men that take much exercise, over that in those who take little, still there is a limit in the vital power of any particular individual to the extent of general increase of muscular power. If all parts of the system are increased in size and power in a colt or a lad, from full general exercise, it seems to follow that if some part is exercised more than another, but not beyond its power of recuperation, that part will receive the most blood and the greatest degree of enlargement in size and increase of strength. This is illustrated by the instances already cited, and the causes of it are well defined in the quotation.

Now suppose the owner of a good brood mare, wishes to raise excellent saddle horses or horses that can draw unusual weights or given weight, at high speed in proportion to their own inches; why cannot this be done? I not only do not believe it not impracticable, but the contrary. Windship commences with lifting 500lbs. and increases his muscular power till he lifts a ton (I have not the information as to how much he can lift at present.) This is accomplished after he has *done growing*, after his muscular system generally is fully matured. If he had commenced special training while yet growing it is probable that his muscular growth and power would have been still more extraordinary in proportion, or nearly in ratio to the muscular means that induced it, up to the limits of total constitutional power. I am amongst those who favor training colts from the earliest possible time till maturity, and as men become great runners, walkers, lifters, etc., etc., by special training, I see not why the colt cannot have a strong back and the other accessories to great carrying power, or a good saddle horse, from similar agencies. Suppose a halter-broken colt, as soon as weaned; then commence with him in carrying light loads, very gradually increased till he has made his full growth, or till he is six years old. Is it not highly probable by this sort of training—the general management being good—he will be able to carry *double* the weight by this time that he could have carried as easily with such training as is generally given? The same course might be adopted as to draft horses, either with heavy weights at a low gait, or light weights with high speed; but not as to both with the same animal, if a specific success is aimed at.

Neither can the natural adaptation of any animal for any given special work be disregarded in assigning him to a different sort of work and ac-

tion. Natural fitness, as well as special discipline, is requisite to success. All parts of the process—as all the wheels of a machine—must support one another with proportional dependence and power.

The principle upon which vital power acts in supplying unusual force, in such instances as we are contemplating, appears to be somewhat like this: Nature in a general way, has the power of self-adjustment, is self-protecting. If you use your legs, for instance, more than other members, they will be worn more by the attrition and friction resulting to all substances from motion or matter in contact, and suffer greater exhaustion of their substance thus worn off. To readjust this loss the vital power impels more blood to the part subject to extra motion and wear, and the flow of blood increasing in proportion to the increase of action and exhaustion, the part—legs, arms, back, or shoulders—is replenished and enlarged by a steady augmentation of substance or nutrition deposited from the increase of blood, till a large proportional increase of size and strength is the result—of specific increase of exercise as the prime original cause; and this course of nutritive action continues till no farther supply of blood can be spared from the general system to any particular part in excess without danger of exhausting or impairing the general health and strength.

The principle is much the same as training a tree in some particular form, by causing the sap to flow in the desired direction—in certain branches more than any other; both sap and blood being subject to the control of vital organizing force, naturally opposed to and inconsistent with general chemical combination. And, as a simple practical question, I perceive no reason why the leading muscles engaged in drawing, carrying, &c., in colts, may not be increased in size and power as readily, and by similar means, in the back, shoulders, &c., as in the human arms or pedal members. It appears to me a practicable project, and if those who have the leisure and inclination and perseverance will give the idea a proper trial, I am satisfied that there need be no disappointment, but that the capacity of the horse will prove capable of special as well as general training and application, to an extent not by many anticipated.—*American Stock Journal*.

## Horticultural.

### Thinning of Fruits.

The following extract from the address of the President of the Pomological Society at its recent meeting in Boston, Mass, contains much that is of practical value to all cultivators of fruit:

One lesson which experience has taught us is the importance of thinning the fruit, especially

of apples and pears. This branch of Pomology has received comparatively little attention. There is a limit to the capabilities of all created things. If you tax the enemies of an animal too severely for a long time, the result will be premature age and decay. Subject any vegetable or mineral substance to too great pressure, and you destroy its power of cohesion. So if you permit a tree to bear beyond its strength, you injure its fruit, retard its growth, and shorten its life. All have observed that superfecundity one year produces barrenness the next. Hence we hear among our farmers and gardeners of what they term the bearing year. They invariably designate the Baldwin apple as a tree that bears on alternate years. But is not the cause of this alternation found in the fact, that the abundant crop of the bearing year exhausts the energies of the tree, and absorbs the pabulum so as not to leave sufficient aliment for the formation of fruit spurs for the succeeding year? Many varieties have a tendency to overbearing, especially those which produce their fruit in clusters. Nature herself teaches us the remedy for this evil, and a superabundance of blossom is generally followed by a profuse falling of the embryo fruit. When and where this dropping is not sufficient to prevent overbearing, we should resort to the process of relieving the tree of a portion of its fruit.

The organism which carries on healthful development, in order to repeat its cycle of functions from year to year, cannot be overworked without time for recuperation. Whatever of nutrition goes to the support of useless branches, or a redundancy of fruit, abstracts that strength from the tree which would otherwise be appropriated to the perfection of the crop, and the development of the spurs which would bear fruit the next year. One of the best cultivators in the vicinity of Boston has reduced this theory to practice, with the happiest effect, in the cultivation of the pear. His system allows no useless wood, nor more fruit spurs, and no more fruit than the tree can properly sustain. As a consequence, it produces every year superior fruit which commands the highest price. Some have doubted whether this practice can be made remunerative, except in its application to the finer fruits. But another cultivator, who raises, an annual crop of the best apples, assures us that the secret of his success is the thinning of the fruit, and he has no doubt of the economy of the practice. No good farmer doubts the necessity of thinning his root crops, no *vigneron* the propriety of thinning his grapes. Analogy of cultivation, therefore, justifies the practice, and I entertain no question of its great importance.

Light, air, moisture, are essential to the production of vegetable products, and especially of fine fruits. Who has not observed that the best specimens of fruits on a tree are ordinarily those which are most exposed to these elements?

Who does not select the full sized ruddy fruit, which has free communion with light, heat, and air, in preference to the half fed specimen which has shared its own proper nourishment with five or six crowded rivals on the same spur?

An experienced English cultivator says:—"The bending of branches of trees by an over crop of fruit is most injurious, for the pores of the woody stalk are strained on the one side of the bend, and compressed on the other; hence the requisite nourishment flows being partially shut up, the growth of the fruit is retarded in proportion to the straining and compression of the stalk." This is illustrated in the overbearing of some varieties, which from a redundancy of fruit, without the process of early and thorough thinning, seldom produce good specimens, and in a few years become stunted and unhealthy trees. The overbearing of a tree is as much a tax upon its energies and constitution, as is the exhaustion of a field by excessive crops of the same kind year after year, without a return of nutritive materials. Inexhaustible fertility is a chimera of the imagination. Sooner or later, the richest soil will require a restoration of what has been abstracted by vegetation. However fertile at first, the constant overcropping of the soil is a reduction of the elements on which health and fruitfulness depend. This great principle of sustenance and reciprocal relations runs through the whole mass of life, of mind, and of matter.

"One cry with never ceasing sound,  
Circles Creation's ample round."

Intimately connected with this process of thinning, is the time when the work should be executed. It should not be done before we can distinguish the choicest specimens in a cluster of fruit, nor delayed so long as to waste the energies of the tree. This practice, judiciously followed, will supersede the necessity of staying up the branches, will prevent injury to the tree by their breaking, and will prove decidedly economical.

"Associated with the thinning of fruits is the expediency of gathering a part of the crop as soon as it approaches maturity. The remaining specimens will thereby be much increased in size and excellence. The fruit of a tree does not all come to maturity at the same time, hence this successional gathering will turn the crop to the highest practical account, and will keep the productive energies of the tree in a healthful and profitable condition."

### The Ever-Blooming Rose.

If there is perfection in the vegetable kingdom, it is the Ever-blooming Rose. Its varieties are now so numerous, their colors so various, and natures so different, that they are arranged into five distinct classes.—Some can be grown in all climates and altitudes, and upon nearly



all kinds of soil. They are fit to make a diversified garden of themselves; growing as dwarf bushes, as tall stately plants, and clothing arbors, trellis-work, dead fences, &c., and even making hedges to fence in and shelter the garden. They are the monarchs of the flower bed, and reign triumphantly glorious over all other flowers; and blessed are they who possess the means, the liberality, and fine taste, to purchase all kinds, and the space to grow them in perfection.

The *Hybrid Perpetuals* or *Remontantes*, are generally of a stately robust growth; thrive equally well upon heavy and light loams, and withstand a northern winter without protection.

The *Bourbons* are next in hardiness, and do best upon loamy soils, yet a slight covering of straw tied around them in winter north of New York, is of advantage to them.

The *Bengal*, *Chinese* or *Daily*, is next in hardiness, thrives both in loamy and sandy soils, and is preserved better by having a little straw tied about them north of Philadelphia.

*Noisette* is of the same hardiness as *Bengal*, and thrives upon the same kind of soils. The varieties are nearly all of a rampant growth; useful for training upon fences, ends of buildings, arbors, trellis-work, pillars, verandah frames, &c. The flowers, are generally small, double, and produced in clusters of twenty and upwards.

The *Tea scented* is generally of dwarf growth, profuse in bloom, and of the most delightful fragrance, which is diffused a great distance. They are less hardy than the other class, and need a covering of straw in winter north of Baltimore. They thrive best upon light loams and sandy loams, and will flourish in sandy soils. They grow to most perfection out of doors south of Maryland, and are the best for pot culture.

All the varieties of the five classes can be grown in the most northern climate by digging them up and potting them in the fall, and keeping them in cold frames or pits half sunk and half banked up, and with glass sashes, and covered with mats in very cold weather, shading them from bright sun in the winter time. As hundreds are yearly putting up cheap glass structures in which to grow foreign grapes, they are the best places to winter roses that cannot stand the severity of winter, as the grapevines are dormant in winter, and the roses could not be in their way, and they get the full light. With these advantages, people in northern latitudes can grow all kinds, and well will they be rewarded for their care.

What is a garden without a rose! As it lasts many years and takes deep root in the ground, the soil before planting should be stirred two feet deep and finely pulverized and enriched with short manures throughout. The black surface scrapings in woods, which is leaf mold, is the best manure for all kinds of roses.—*W. Elder, in Gardener's Monthly.*

## Grape Vines.

Those vines which need protection should soon be taken down and covered with leaves, straw, or if the drainage is sufficiently good, with earth. The covering need not be thick, as a slight shelter will keep off the frost. Cut away most of the wood you design to have pruned, before covering. If the vines are left exposed, do not prune, as the winter may kill them, so that your pruning would take a different course in the spring. A subscriber who has purchased vines for the *Isabella*, which turn out to be the pigeon grape, wishes to know how and when to bud. It should be done as soon as the sap starts in spring. Cut an eye about three inches in length, having attached as much wood as you can get with it; at each end of the eye cut off about a quarter of an inch of the upper bark, making the ends very thin. Next cut out neatly a notch in the bark of the vine you wish to bud, and fit in the eye to the place exactly as possible. Bind it about firmly with some soft bandage, as of matting, and clay it, taking care not to cover the eye. Bind it about with moss and keep it moist until the bud begins to swell. As your vine throws out young shoots, pinch them off above the bud to give it more strength, and after a while keep the branch you have budded entirely pruned down about the bed.—*Jour. of Agriculture.*

## MODE AND TIME OF PLANTING GRAPE VINES.

—Geo. W. Campbell, of Delaware Grape notoriety, makes the following remarks in his circular: I have found little difference in the growth of vines, whether planted in Fall or Spring. When planted in the Fall, and slightly protected during the first winter, an early start, and usually a more vigorous growth may be expected, than from vines transplanted in Spring. A somewhat elevated situation, and a deep, pervious soil, moderately rich, is best. A calcareous clay loam, well underdrained, will produce good, healthy vines and fruit, and if abounding somewhat with gravel or pebbles, so much the better. If lime does not exist naturally in the soil, it should be pretty freely supplied; and if the soil is poor, enrich it with any well decomposed manure at hand. Fresh, or partially decomposed manure induces unhealthy growth, and disposes vines to mildew. Low situations, where water can settle and stagnate about the roots, will not answer. Where immediate fruiting of young vines is desired, permit but one cane to grow; stop, or pinch off all laterals at one joint from the main stem; keep the vine tied upright, and at the height of four or five feet pinch off the leading shoot. This course will strengthen the lower buds, and often give fruit the year after planting.

## Veterinary Department.

(Conducted by A. Smith, V. S.)

### Variola Ovina, or Small Pox in Sheep.

This singular disease has broken out in several extensive flocks in the north and west of England, attended by heavy losses, and from the latest accounts considerable anxiety was felt by the flockmasters both of Great Britain and Ireland lest its ravages should extend northward. The following communication of a Veterinary Surgeon in Dublin, published in a recent number of the *Irish Farmer's Gazette* will be read with interest:

SIR,—This disease, now prevalent in some parts of England, and designated by the French, *Clavelle*, is an acute inflammation of the tegumentary investment of the body, associated with fever of a highly contagious nature. Pathologists divide it into distinct, confluent, natural, and inoculated, the two former referring to the separation or non-separation of the enlargements or papulæ which appear on the skin of the affected animal; the two latter, to the causes of the disease, whether they be that of simple exposure to the affection, natural, or direct introduction of the ovine virus into the system inoculated: of these four varieties, the confluent form is more fatal than the distinct, and the natural than the inoculated.

Many diseases affecting the lower animals are capable of remaining dormant for sometime after their respective poisons have been received into the system. This period, though varying, is technically termed the period of incubation, and is influenced by circumstances of an external nature, such as the temperature of the surrounding air, freedom from or presence of other diseases, temperament of the animal, &c., causes which either hasten or delay the eruption.

Hurtel d'Arboval, in his treatise on the subject, remarks that in warm weather the malady will show itself in ten or twelve days, but remain dormant for double that time when the temperature is low. In experiments conducted at the Royal Veterinary College, London, the period varied from seven to thirteen days. The incubative stage having expired, features characteristic of the malady appear in the form of papulæ or nodules having a florid appearance, deeply imbedded in the skin, generally located on the inner side of the cheeks, arms, and lips, which either coalesce or remain separate, constituting confluent small pox in the former case, distinct in the latter. In about three days the papulæ become converted into vesicles by effusion underneath the outer skin, or dermis, of a transparent fluid. The fluid contains the virus

of the ovine pox. The contents of the vesicles become consecutively opaline, turbid, less serous, and ultimately converted into dry, hard crusts which fall and leave depressions of various depths, to be filled up by a process of healing termed granulation. In addition to the local changes just described, the animal gives constitutional evidence of this disease, by separating itself from the flock, mucous discharge from the nostrils, head and ears pendent, eye-lids swollen, with a flow of tears down the face, respiration hurried, pulse quick and indistinct, approaching dissolution.

Although the introduction of sheep pox into Ireland would be a calamity generally to be lamented (difficult to prevent, unless the importation of English sheep be suspended for a time), and one that would most assuredly result in the death of thousands of our sheep, the profession have furnished themselves with a weapon, namely, ovination or inoculation, which in the hands of the scientific veterinarian, has been, and would again be, the means of precluding the natural disease by the artificial, and thus deprive the former of its mortal potency. This practice was proposed by Chabette, in 1762, by Bourgelat, in 1765, by Coste, 1795, and is annually resorted to in France, Austria, Prussia, and Italy. In a treatise by Hurtel d'Arboval it is set forth that of 32,317 inoculated sheep, 32,121 took the artificial disease and only 270 died. In order to test its prophylactic power, 7,697 of the successfully inoculated sheep were exposed to the influence of contagion, and not one suffered a second time; but it is not necessary to travel to the continent for statistical information.

Professor Simonds, in his lectures, states that he found the mortality of the natural disease to be from 50 to 75 and even 90 per cent., whereas the number of deaths attending ovination, when properly performed, averaged five, but rarely reached ten per cent. Yet, much as may be said in favour of the operation, one objection exists. The inoculated and natural disease are equally contagious, hence the absolute necessity, when ovation is practised, of so far isolating the affected animals as to prevent even indirect contact with the healthy.

The most benign case of distinct small pox in the vesicular stage having been selected, the operator chooses a solitary vesicle having clear aqueous contents, and places the point of instrument (which is a kind of needle made for the purpose) barely far enough into the vesicle to moisten the top. This may be preserved for purposes of inoculation for several weeks. If necessary, the operator may at once insert point of same needle between the cuticle, or outer skin, and dermis or true skin, avoiding the production of the smallest drop of blood. Bear in mind that the incision cannot be too minute, and the needle cannot contain too little fluid. The parts operated on are, the under surface of the teat,



which is the most advantageous, inner part of the thighs, postero inferior part of the abdomen, and lateral parts of the sternum. Evidence of successful inoculation will be given in about three days, by a speck, remarkable for the intensity of its redness, which enlarges simultaneously with the increase of inflammation till the eighth day. Tenth shows unibilication of the centre; thirteenth, blanched appearance, due to the elevation of the cuticle from the true skin, and effusion underneath of a transparent fluid; eighteenth, a brown scab, which falls, leaving a chasm to be filled up by a process of reparation, termed granulation. As it sometimes happens that the vesicle of inoculation is the only one which appears, for purposes of ovination the fluid therein contained may be used, and reliance placed on its reproductive potency.

In order to render the virus of sheep pox milder in its constitutional effects, it has been proposed to pass it through the systems of other animals; but all such attempts have signally failed. Sheep pox cannot be transmitted to the ox, goat, or human subject, neither shall the small pox of man or the analogous vaccine disease of the cow produce a like affection in the sheep. Purification, however, can be effected by causing it to travel successively through the systems of several sheep; lymph so procured degenerates a disease which goes through its several stages more regularly, renders the constitutional disturbance and local ulceration less; hence the losses are fewer, and the management of the existing disease easier. Having operated on a flock of healthy sheep, they should be divided into several lots, to prevent crowding (which is apt to induce a malignant form of the disease), provided with well ventilated apartments, supplied frequently with fresh water, and allowed good, nitrogenous food. In the majority of instances the foregoing cursory remarks (which are merely intended to convey to the reader a rough notion of the disease in some of its forms) will, I think, be found sufficient, if properly carried out, to ensure more than average success.—Yours, &c., ANDREW GANLY, V S., *Usher's Quay Dublin.*

## Transactions.

### Prize List, Provincial Exhibition.

The following is the corrected list of the prizes awarded at the Seventeenth Annual Exhibition of the Agricultural Association, held at Toronto, September 23 to 26, 1862:

#### CLASS I.—BLOOD HORSES—(31 Entries.)

*Judges.*—E. Wilmot, Kingston; G. Bennett, Cobourg; Geo. Robson, London; Capt. Tyrwhitt, Bradford.

Best thorough-bred stallion, Thomas Downing, Oshawa, "Young Sir Tatton," \$40; 2nd do, Ed. Arkland, Oshawa, "Kennett," \$25; 3rd do, Geo Cooper, Toronto, "Highflyer," \$12.

Best 3 years old stallion, Thomas Downing, Oshawa, "Imperator," subject to proof of being thorough-bred, \$22; 2nd do, Simon P. Dumond, Scarboro, "Wagoner Eclipse," subject to proof of being thorough bred, \$14; 3rd do, Geo. G. Grange, Guelph, "Pluto," \$7.

Best 2 years old stallion, George Palmer, Guelph, subject to proof of pure breeding, \$14.

Best Yearling colt, John Dew, Yorkville, \$8; 2nd do, Geo Palmer, Guelph, subject to proof of being pure bred, \$6.

Best thorough-bred stallion of any age, Ed. Arkland, Oshawa, Diploma.

Best three years old filly, James White, Bronte, "Annie Laurie," \$18; 2nd do, John Dew, Yorkville, \$11.

Best 2 years old filly, James White, Bronte, \$14.

Best yearling filly, Jas. White, Bronte, \$8.

Best mare and foal, or evidence that the foal has been lost, James White, Bronte, \$22; 2nd do, John Dew, Yorkville, \$14; 3rd do, Geo. Palmer, Guelph, subject to proof of being pure bred, \$6.

Extra prize—Thorough-bred mare in foal, James White, Bronte, subject to production of foal, \$6.

#### CLASS II.—AGRICULTURAL HORSES—(113 Entries.)

*Judges.*—Jacob Young, York, Co. Haldimand; John Bobier, Tyrconnell; Matthew Jones, Darlington.

Best stallion for agricultural purposes, Thos. Gowland, York, Grand River, \$40; 2nd do, Hector Scott, Brooklin, \$25; 3rd do, George Gowland, Woodbridge, \$12.

Best 3 years old stallion, Alexander Burgess, Agincourt, \$22; 2nd do, John Hewer, Guelph, \$14; 3rd do, James Ferris, Galt, \$7.

Best 2 years old stallion, Thomas Teasdale, Grahamsville, \$14; 2nd do, G. Higginbottom, Balsam, \$10; 3rd do, K. Graham, Belleville, \$7.

Best yearling colt, Robert Armstrong, Markham, \$8; 2nd do, Richard Power, Columbus, \$6; 3rd do, George Alton, Nelson, \$4.

Best agricultural stallion any age, Thomas Gowland, York, Grand River, Diploma.

Best 3 years old filly, George Scott, Woburn, \$18.

Best 2 years old filly, George Scott, Woburn, \$14; 2nd do, Charles Pilkey, Claremont, \$9; 3rd do, James Lawrie, Malvern, \$4.

Best yearling filly, George Gray, Mayfield, \$8; 2nd do, James Nimmo, Clark's Mills, \$6.

Best brood mare and foal, or evidence that the foal has been lost, Thomas Gowland, York, Grand River, \$22; 2nd do, Robert Beath, Darlington, \$14; 3rd do, John Moore, Islington, \$6.

Best span matched farm or team horses, John Clark, Brampton, \$20; 2nd do, Wm. Elford, jun., township of Darlington, \$15; 3rd do, Andrew Allison, Burnhamthorpe, \$10.

REMARKS BY JUDGES.—The judges beg leave to remark that the horses exhibited in this class were very superior, and show a great improvement upon former years, more particularly in the two year old stallions. The judges are of opinion that the system of publishing catalogues and placing them in the hands of judges should be dispensed with, and that the judges should not know who the exhibitor is, or where he came from. The judges would also suggest that, were there a second ring to exhibit the horses in it would greatly expedite business, as two sets of judges could then act at the same time.

#### CLASS III.—ROAD OR CARRIAGE HORSES— (171 Entries.)

*Judges.*—George Robson, Whitby; Alex. Alcorn, Cobourg; George Taylor, Belleville; Charles DeBlaquiere, Woodstock.

Best roadster or carriage stallion, 4 years old and upwards, James Armstrong, Yarmouth, \$40; 2nd do, Robert Stephens, Streetsville, \$25; 3rd do, J. E. Davis, Richmond Hill, \$12.

Best do, 3 years old, John Gibson, New-castle; 2nd do, J. S. Palmer, Rouge Hill, \$14; 3rd do, Marmaduke Laidman, Binbrook, \$7.

Best do, 2 years old, Jacob Stong, Yorkville, \$14; 2nd do, Thomas Webb, Toronto, \$10; 3rd do, Donald Robertson, Queenston, \$5.

Best yearling colt, John Colley, Mount Hurst, \$8.

Best stallion of any age, James Armstrong, Yarmouth, Dip.

Best French Canadian stallion, James John-

son, Cooksville, \$30; 2nd do, John Miller, Castleton, 20; 3rd do, James Fitzsimmons, St. Thomas, \$10.

Best 3 years old roadster filly, Thomas Smith, Derry West, \$18; 2nd do, John Boulton, Toronto, \$11.

Best 2 years old filly, Robert Beith, Darlington, \$14; 2nd do, George Cooper, Toronto, \$9; 3rd do, A. H. B. Wadsworth, Toronto, \$4.

Best yearling filly, James Hugill, Yorkville, \$8; 2nd do, John Boulton, Toronto, \$6.

Best brood mare and foal, or evidence of foal having been lost, Felix Graham, Belleville, \$22; 2nd do, James Preston, Hornby, \$14; 3rd do, Simon Shunk, Concord, \$6.

Best pair of matched carriage horses, John Nickerson, Middleton, \$20; 2nd do, George S. Daintry, Cobourg, \$15; 3rd do, John Lindsay, Woodstock, \$10.

Best single carriage horse in harness, Henry Lutes, Boston, \$10; 2nd do, Donald Cameron, Kleinburg, \$8; 3rd do, John Elliott, Duffin's Creek, \$6.

Best saddle horse, Hon. J. Ross, Toronto, \$10; 2nd do, Hendrie & Co., Hamilton, \$8; 3rd do, John Nickerson, Delhi, Norfolk, \$6.

#### EXTRA ENTRIES.

Forest Pony, imported from Scotland, B. A. McDonald, Toronto, \$3.

Pair of Ponies, Hiram Anderson, Galt, \$4.

A horse exhibited by Mr. Powell, Lewiston, N. Y., "King George," not entered, commended.

REMARK BY JUDGES.—We beg to recommend that in future exhibitions there should be a second ring for the purpose of viewing the horses in. The judging could then be done in a more satisfactory manner, and with a saving of time.

#### CLASS IV.—HEAVY DRAUGHT HORSES.—(62 Entries.)

*Judges.*—G. S. Burrill, Brighton; John Dunlop, Woodstock.

Best heavy draught stallion, John Sanderson, Markham, imported from England since last show, \$120; 2nd do, Robert Ferris and W. Ritchie, Richmond Hill, \$25; 3rd do, Jos. Thompson, Markham, \$12.

Best 3 years old stallion, J. Wilson, Osawa, \$22; 2nd do, John Shedden, Toronto, \$14.

Best 2 years old stallion, John Sanderson, Markham, imported from England since last



show, \$42; 2nd do, James McConnachie, Orono, \$10; 3rd do, William Jackson, York Mills, \$5.

Best yearling colt, John Miller, Brougham, \$8; 2nd do, E. Foster, Humber, \$6; 3rd do, James Armstrong, Toronto, \$4.

Best draught stallion, of any age, John Sanderson, Markham, Diploma.

Best 3 years old filly, J. G. L. Pearson, King, \$18; 2nd do, George Miller, Markham, \$11; 3rd do, George Scott, Scarboro, \$6.

Best 2 years old filly, George Miller, Markham, \$14; 2nd do, James Young, Mayfield, \$9.

Best brood mare and foal, or evidence that the foal has been lost, John Miller, Brougham, \$22; 2nd do, James Nimmo, Kingston, \$14; 3rd do, John Wilson, Oshawa, \$6.

Best span of draught horses, John Thompson, Whitby, \$20; 2nd do, James Lawrie, Scarboro, \$15; 3rd do, John Shedden, Toronto, \$10.

REMARKS BY JUDGES.—Great delay and consequent inconvenience therefrom was caused by the want of another horse ring, the necessity for which was felt last year, and a recommendation made by the judges to that effect. This season has shown more fully the requirement of such additional ring, as the judges in this class have only been enabled to make their return at this late hour of Thursday at five o'clock. The wrong classing of animals has caused much trouble to the judges, as well as probable losses to the owners; at least the judges in this class had to pass over animals that might have been worthy of prizes if entered in their proper class. But this is a difficulty which must only be remedied by the exhibitors, but the suggestion is offered in the hope that the committee may devise some method to obviate the error for the future.

#### CLASS A.—HORSES OF ANY BREED.—(51 Entries.)

*Judges.*—A committee of the judges of all the other classes of horses.

The best stallion of any age or breed, Jas. Armstrong, Yarmouth, Elgin, DIPLOMA AND GOLD MEDAL.

### CATTLE.

#### CLASS V.—DURHAMS.—(142 Entries.)

*Judges.*—John P. Wheler, Scarboro; John Stiles, London; Robert C. Smith, Chinguacousy; E. A. Harland, Guelph; Samuel Dickenson, Port Hope; John Wade, Port Hope.

Best bull 4 years old and upwards, George Miller, Markham, "Prince of Wales," \$36; 2nd do, Edward Jones, Thorold, "Robin Hood," \$24; 3rd do, James White, Bronte, "Milton," \$16; 4th do, F. W. Stone, Guelph, "Third Grand Duke," \$8.

Best 3 years old bull, John White, Georgetown, "Halton 2d," \$32; 2nd do, Gavin Craig, Grafton, "Comet," \$20; 3rd do, D. Robertson, Queenston, "Alfred," \$12; 4th do, Simon Shunk, Concord, "Goldfinder," \$6.

Best 2 years old bull, John Miller, Brougham, "Canadian Punch," \$24; 2nd do, Jas. Kirkland, Indiana, "Robie Burns," \$16; 3rd do, Henry Talbot, Everton, "Young Prince of Wales 2d," \$9; 4th do, Brodie, Campbell & Co., Jefferson Co., N. Y., "Iron Duke," \$5.

Best one year old bull, John Snell, Edmonton, "Baron Solway," \$20; 2nd do, Arthur Hetherington, London, "Lord Portman," \$12; 3rd do, George Cooper, Toronto, "Young General Havelock," \$8; 4th do, Thomas Stock, Waterdown, \$4.

Best bull calf (under 1 year old) John Snell, Edmonton, "Robin Hood," \$16; 2nd do, John Snell, Edmonton, "Sir Colin," \$10; 3rd do, Fred. W. Stone, Guelph, \$6; 4th do, Fred. W. Stone, Guelph, \$3.

Best bull of any age, George Miller, Markham, "Prince of Wales," Diploma.

Best cow, Samuel Hodgskin, Guelph, "Snowdrop," \$20; 2nd do, Arthur Hogge, Guelph, "Mary," \$12; 3rd do, Thos Stock, Waterdown, "Betsey," \$8; 4th do, John Thomson, Whitby, "Lady of Athelstane," \$4.

Best 3 years old cow, F. W. Stone, Guelph, "Isabella 4th," \$16; 2nd do, H. P. Welford, Woodstock, "Rufe" \$10; 3rd do, Thomas Stock, Waterdown, "Lizzie," \$6; 4th do, Henry Jennings, Victoria Square, "Snowdrop," \$4.

Best two years old heifer, F. W. Stone, Guelph, "Cambridge 2nd," \$12; 2nd do, Jas. Vine, Niagara, "Blossom" \$8; 3rd do, Samuel Hodgskin, Guelph, "Meta," \$5; 4th do, F. W. Stone, Guelph, "Matchless," \$3.

Best yearling heifer, F. W. Storm, Guelph, "Sanspareil 7th," \$10; 2nd do, F. W. Stone, Guelph, "Maid of Honor," \$6; 3rd do, Henry Jennings, Markham, "Lady Anne," \$4; 4th do, F. W. Stone, Guelph, "Duchess of Oxford 2nd," \$2.

Best heifer calf under one year, F. W. Stone, Guelph, "Duchess of York 2nd," \$6;

2nd do, Arthur Hogge, Guelph, \$4 ; 3rd do, F. W. Stone, Guelph, \$2 ; 4th do, John Dew, Yorkville, \$1.

Best herd of Durhams, consisting of one bull and five cows or heifers, or cows and heifers, of any age, F. W. Stone, Guelph, \$40.

CLASS VI.—DEVONS.—(110 Entries.)

*Judges.*—John Dew, Yorkville ; Richard Harper, Whitby ; John B. Carpenter, Simcoe, Norfolk.

Best bull, 4 years old and upwards, John Davey, Leskard, "Lord John Russell," \$36 ; 2nd do, Thomas Allen, Whitby, "Devonian," \$24 ; 3rd do, Charles Sefton, Westminster, "Sir Luton," \$16 ; 4th do, E. G. O'Brien, Shanty Bay, Barrie, "Prince of Wales," \$8.

Best 3 years old bull, Chris. Courtice, Bowmanville, "Conqueror," \$32 ; 2nd do, Daniel Tye, Wilmot, "Wilmot," \$20 ; 3rd do, Chris. Courtice, Bowmanville, "Duke," \$12.

Best 2 years old bull, J. & H. Spencer, Brooklin, "Prince of Wales," \$24 ; 2nd do, John Goodall, Galt, "Napoleon," \$16 ; 3rd do, Daniel Tye, Wilmot, "Lord Elgin," \$9 ; 4th do, John Pincombe, London, "Baby Bull the 3rd," \$5.

Best one year old bull, Chris. Courtice, Bowmanville, "Garibaldi," \$20 ; 2nd do, John Pincombe, London, "Samson 4th," \$12 ; 3rd do, Chris. Courtice, Bowmanville, \$8 ; 4th do, Samuel Peters, sen., London, "Wildiar," \$4.

Best bull calf, under one year, Chris. Courtice, "Governor," \$16 ; 2nd do, John Pincombe, London, "Baby Bull 6th," \$10 ; 3rd do, C. Courtice, Bowmanville, "Prince Alfred," \$6 ; 4th do, John Pincombe, London, "Eardley Bull," \$3.

Best bull of any age, Chris. Courtice, Bowmanville, "Conqueror," Diploma.

Best cow, Chris. Courtice, Bowmanville, "Beauty," \$20 ; 2nd do, Chris. Courtice, Bowmanville, "Stately," \$12 ; 3rd do, John Moore, Islington, "Beauty," \$8 ; 4th do, John Pincombe, London, "Lady Quartley," \$4.

Best three years old cow, John Pincombe, London, "Lady Quartley 2nd," \$16 ; 2nd do, John Pincombe, London, "Lady Young Beauty," \$10 ; 3rd do, John Moore, Islington, "Jessie," \$6 ; 4th do, G. Z. Rykert, St. Catharines, "Jessie," \$6.

Best 2 years old heifer, H. & J. Spencer, Brooklin, "Princess Royal," \$12 ; 2nd do, John Pincombe, London, "Lady Baker," \$8 ;

3rd do, John Pincombe, London, "Lady Boutecher," \$5 ; 4th do, Chris. Courtice, Bowmanville, "Gay Lass," \$3.

Best 1 year old heifer, John Pincombe, London, "Lady Quartley 4th," \$10 ; 2nd do, John Pincombe, London, "Lady Eardley 2nd," \$6 ; 3rd do, D. Tye, Wilmot, "Sophia 5th," \$4 ; 4th do, John Pincombe, London, "Lady Young Beauty 4th," \$2.

Best heifer calf, under one year, Chris. Courtice, Bowmanville, \$6 ; 2nd do, Chris. Courtice, Bowmanville, \$4 ; 3rd do, John Moore, Islington, \$2 ; 4th do, Daniel Tye, Wilmot, "Sophia 6th," \$1.

Best herd of Devons, consisting of one bull and five cows or heifers, or cows and heifers of any age, John Pincombe, London, \$40.

The herd exhibited by Chris. Courtice, Bowmanville, highly commended.

CLASS VII.—HEREFORDS.—(32 Entries.)

*Judges.*—Geo. Murton, Guelph ; D. D. Rogers, Kingston ; Edward Jones, Stamford ; Wm. Gardner, Barrie.

Best bull, 4 years old and upwards, J. R. McMicking, Queenston, \$36.

Best 2 years old bull, F. W. Stone, Guelph, "Patriot," \$24.

Best 1 year old bull, F. W. Stone, Guelph, "Sailor," imported from England since last show, \$60.

Best bull calf (under one year,) F. W. Stone, Guelph, "Guelph," \$16 ; 2nd do, J. R. McMicking, Queenston, \$10.

Best bull of any age, J. R. McMicking, Queenston, Diploma.

Best cow, F. W. Stone, Guelph, "Gentle," \$20 ; 2nd do, F. W. Stone, Guelph, "Hera," \$12 ; 3rd do, J. R. McMicking, Queenston, \$8 ; 4th do, F. W. Stone, Guelph, "Baroness," \$4.

Best 3 years old cow, F. W. Stone, Guelph, "Bonny Lass," \$16 ; 2nd do, F. W. Stone, Guelph, "Verbena," \$10 ; 3rd do, F. W. Stone, Guelph, "Princess," \$6 ; 4th do, J. R. McMicking, Queenston, \$4.

Best 2 year old heifer, F. W. Stone, Guelph, "Graceful," imported from England since last show, \$24 ; 2nd do, F. W. Stone, Guelph, "Gentle 2nd," \$8.

Best 1 year old heifer, F. W. Stone, Guelph, "Wild Rose," imported from England since last show, \$20 ; 2nd do, F. W. Stone, Guelph, "Sweatheart," \$6.

Best heifer calf (under one year,) F. W.



Stone, Guelph, "Baroness 2nd," \$6; 2nd do, F. W. Stone, Guelph, "Necklace," \$4; 3rd do, J. R. McMicking, Queenston, \$2; 4th do, F. W. Stone, Guelph, "Gentle 3rd," \$1.

Best herd of Herefords, consisting of 1 bull and 5 cows or heifers, or cows and heifers, of any age, F. W. Stone, Guelph, \$40.

CLASS VIII.—**AYRSHIRES.**—(100 Entries.)

*Judges.*—Henry Battell, Grafton; Joseph Rowat, Nilestown; John Ker, Drummondville.

Best bull 4 years old and upwards, Joseph Boyle, Flamboro, "Norval" \$36; 2nd do, R. L. Denison, Toronto, "Lippincott," \$24; 3rd do, John Torrance, Scarboro, "Wilton," \$16.

Best 3 years old bull, R. L. Denison, Toronto, "Bulrush," \$32.

Best 2 year old bull, James Nimmo, Clark's Mills, "Watty 2nd," \$24; 2nd do, Brodie, Campbell & Co., Jefferson Co., N. Y. "Dr. Hornbook," \$16; 3rd do, G. H. Ryland, Picton, \$9; 4th do, George Scott Woburn, \$5.

Best 1 year old bull, P. R. Wright, Cobourg, "Lord Clyde," \$20; 2nd do, Simon Beattie, Markham, "Carrick Farmer," \$12.

Best bull calf under 1 year, P. R. Wright, Cobourg, "Waverley," \$20; 2nd do, S. Beattie, Markham, "Roby Burns," \$10; 3rd do, P. R. Wright, Cobourg, "Garibaldi," \$6; 4th do, R. L. Denison, Toronto, "Dover Court," \$3.

Best bull of any age, P. R. Wright, Cobourg, "Lord Clyde," Diploma.

Best cow, P. R. Wright, Cobourg, "Peerless," \$20; 2nd do, P. R. Wright, Cobourg, "Buttercup," \$12; 3rd do J. F. Converse, Jefferson County, N. Y., \$8; 4th do, Brodie, Campbell & Co., Jefferson County, N. Y., "Lady Ayr," \$4.

Best 3 years old cow, J. P. Wheler, Scarboro, \$16; 2nd do P. R. Wright, Cobourg, "Mayday," \$10; 3rd do R. L. Denison, Toronto, "Poppy" \$6; 4th do do do "Daisy," \$4.

Best two years old heifer, Simon Beattie, Markham, imported from Scotland, 1862, \$24; 2nd do P. R. Wright, Cobourg, "Milkmaid 2nd," \$8; 3rd do Brodie, Campbell & Co., Jefferson County, N. Y. "Nannie," \$5; 4th do John Torrance, Scarboro, "Beauty," \$3.

Best one year old heifer, John Miller, Brougham, \$10; 2nd do John Torrance, Scarboro, "Fine Ear," \$6; 3rd do Geo Mil-

ler, Markham, "Music," \$4; 4th do P. R. Wright, Cobourg, "Nora Creina," \$2.

Best heifer calf, under one year, Simon Beattie, Markham, "Mountain Maid," imported from Scotland, 1862, \$12; 2nd do P. R. Wright, Cobourg, "Bessie Bell," \$4; 3rd do John Torrance, Scarboro, \$2; 4th do R. L. Denison, Toronto, "Miss Neville," \$1.

Best herd of Ayrshires, consisting of one bull and five cows or heifers, or cows and heifers of any age, P. R. Wright, Cobourg, \$40.

CLASS IX.—**GALLOWAY, AND POLLED ANGUS OR ABERDEEN CATTLE.**—(79 Entries.)

*Judges.*—W. Woods, Hastings; Geo. Bell, Vaughan; Geo. Roddick, Cobourg.

Best Bull, four years old and upwards, James Graham, Woodbridge, "Black Jock," \$36; 2nd do, James Nimmo, Clark's Mills, "Prince Albert," \$24; 3rd do, John Fleming, Vaughan, \$16; 4th do James Auld, Hamilton, \$6.

Best three years old bull, A. Kyle, Ayr, "Prince Albert," \$32; 2nd do, E. W. Thomson, Toronto, \$20.

Best two years old bull, Geo. Anderson, Varna, \$24; 2nd do, G. Z. Rykert, St. Catharines, "Clear Grit," \$16; 3rd do, Alex. Kerr, London, \$9; 4th do, James Summer-ville, Coleraine, "Black Bob," \$5.

Best one year old bull, John McClain, Clover Hill, \$20; 2nd do, John Snell, Edmonton, "Dred," \$12.

Best bull calf, under one year, Jas. Graham, Woodbridge, "McQuhorn," \$16; 2d do, And. Kyle, Ayr, \$10; 3rd do, Arthur McNeil, Woodbridge, \$6; 4th do, John Snell, Edmonton, "Duncan," \$3.

Best bull of any age, Jas. Nimmo, Clarke's Mills, "Prince Albert," Diploma.

Best cow, James Nimmo, Clark's Mills, "Lady Favorite," \$20; 2nd do, John Fleming, Vaughan, \$12; 3rd do, John Snell, Edmonton, "Bonnie," \$8; 4th do, do, do, "Sall," \$4.

Best three years old heifer, John Snell, Edmonton, "Blooming Heather," \$16; 2nd do, Jas. Nimmo, Clark's Mills, "Queen Victoria," \$10; 3rd do, A. McNeil, Woodbridge, \$6; 4th do, John Snell, Edmonton, "Lucy," \$4.

Best two years old heifer, John Snell, Edmonton, "Blooming Beauty," \$12; 2nd do, Jas. Auld, Hamilton, \$8; 3rd do, John Moore, Islington, \$5; 4th do, Geo. Miller, Markham, \$3.

Best one-year old heifer, Arthur McNeil, Woodbridge, \$10; 2nd do, John Fleming, Vaughan, \$6; 3rd do, John Snell, Edmonton, "Lavinia," \$4; 4th do, John Fleming, Vaughan, \$2.

Best heifer calf, under one year, John Snell, Edmonton, "Pocahontas," \$6; 2nd do, James Nimmo, Clark's Mills, "Lady Barnet 3d," \$4; 3rd do, John Fleming, Vaughan, \$2; 4th do, David Messenger, Cooksville, \$1.

Best herd of Galloways and Polled Angus or Aberdeen cattle, consisting of one bull and five cows or heifers, or cows and heifers of any age, John Snell, Edmonton, \$40.

CLASS X.—THE PRINCE OF WALES PRIZE, AND PRIZES OPEN TO ALL BREEDS OF CATTLE.  
—(61 Entries.)

*Judges.*—John P. Wheler, Scarboro; John Stiles, London; E. A. Harland, Guelph; Robt. C. Smith, Brampton; Samuel Dickenson, Port Hope; John Dew, Yorkville; Geo. Roddick, Cobourg; Henry Battell, Grafton.

Best Durham bull, of any age—prize presented by His Royal Highness the Prince of Wales, George Miller, Markham, "Prince of Wales," \$60.

For the best bull, of any age or breed, George Miller, Markham, "Prince of Wales," diploma and Silver Medal.

For the best animal in the yard, male or female, George Miller, Markham, Durham Bull "Prince of Wales," diploma and silver medal.

CLASS XI.—GRADE CATTLE.—(64 Entries.)

*Judges.*—Duncan McVicar, Chatham; Robt. Gibbons, Goderich; Wm. Boynton, Reach.

Best grade cow, Samuel Hodgskin, Guelph, \$20; 2d do, Thomas Stock, Waterdown, \$12; 3d do, James Bellwood, Newcastle, \$8; 4th do, Jacob Lämmer, Maple, \$5.

Best three years' old cow, James Bellwood, Newcastle, \$16; 2nd do, Thomas Stock, Waterdown, \$10; 3rd do, W. R. Forster, Credit, \$6; 4th do, James R. Todd, Brampton, \$4.

Best two years' old heifer, Arthur Hogge, Guelph, \$12; 2nd do, Samuel Hodgskin, Guelph, \$8; 3rd do, Albert Parker, Cooksville, \$5; 4th do, Samuel Hodgskin, Guelph \$3.

Best one year old heifer, John Gill, Grahamsville, \$10; 2nd do, do, do, \$6; 3rd do,

Joseph Capner, Kleinburg, \$4; 4th do, John Ross, Toronto, \$2.

Best heifer calf, under one year, Geo. Miller, Markham, \$6; 2nd do, Arthur Hogge, Guelph, \$4; 3rd do, James Bellwood, Newcastle, \$2; 4th do, J. R. Todd, Brampton, \$1.

THE FERGUS CUP.

Best grade heifer, not more than two years old on March 1, 1862, the produce of a pure bred Durham bull, having a recorded pedigree, and of a cow of any breed, not more than one remove from thorough bred, Prize given by the late Hon. A. Fergusson. Arthur Hogge, Guelph, "Ringlet," SILVER CUP.

CLASS XII.—FAT AND WORKING CATTLE ANY BREED.—(32 Entries.)

*Judges.*—Robert Kirkwood, Hamilton; Robert Best, Niagara; Henry Andrews, Kingston.

Best fat ox or steer, Jno. Gould, Cooksville, \$30; 2nd do, Jas Vine, Lincoln, St. Catharines, \$20; 3rd do, Horace Capron, Paris, \$12.

Best fat cow or heifer, Jno. Mitchellrie, London, \$30; 2nd do, Henry Gould Whitby, \$20; 3rd do, W. Donaldson, Woodstock, \$12.

Best yoke of working oxen, Jno. Baker, Waterdown, \$20; 2nd do, Wm. Armstrong, Markham, \$12; 3rd do, Jno. Henry, Yorkville, \$8.

SHEEP—LONG WOOLLED.

CLASS XIII.—LEICESTERS.—(228 Entries.)

*Judges.*—J. R. Ireland, East Flamboro; John Smith, Hamilton; A. Sanderson, Cra-mahe.

Best ram, two shears and over, William Waites, Gore of Toronto, \$16; 2d do, John Robson, London, \$10; 3d do, John Snell, Chinguacousy, \$5.

Best shearing ram, John Snell, Chinguacousy, \$16; 2d do, do, do, \$10; 3d do, do, do, \$5.

Best ram lamb, George Jackson, Gore of Toronto, \$8; 2d do, do, do, \$4; 3d do, John Robson, London, \$2.

Best 2 ewes, two shears and over, Christopher Walker, London, \$16; 2d do, do, do, \$12; 3d do, John Snell, Chinguacousy, \$6.

Best 2 shearing ewes, Christopher Walker, London, \$12; 2d do, John Snell, Chingua-



cousy, \$8; 3d do, John Müller, Pickering, \$4.

Best 2 ewe lambs, Christopher Walker, London, \$6; 2d do, John Snell, Chinguacousy, \$4; 3d do, do, do, \$2.

CLASS XIV.—COTSWOLDS.—(62 Entries.)

*Judges.*—Wm. Caldwell, Trafalgar; John Foott, Port Hope; Thomas Waters, Guelph.

Best ram, two shears and over, F. W. Stone, Guelph, \$16; 2d do, do, do, \$10; 3d do, do, do, \$5.

Best shearling ram, F. W. Stone, Guelph, \$16; 2d do, do, do, \$10; 3d do, John Snell, Chinguacousy, \$5.

Best ram lamb, John Snell, Chinguacousy, \$8; 2d do, do, do, \$4; 3d do, do, do, \$2.

Best 2 ewes, two shears and over, John Snell Chinguacousy, \$16; 2d do, F. W. Stone, Guelph, \$12; 3d do, George Miller, Markham, \$6.

Best 2 shearling ewes, F. W. Stone, Guelph, \$12; 2nd do, do, do, \$8; 3d do, Thomas Smith, Toronto Township, \$4.

Best 2 ewes lambs, John Snell, Chinguacousy, \$6; 2d do, do, do, \$4.

CLASS XV.—OTHER LONG WOOLLED SHEEP,  
NOT LEICESTERS, OR COTSWOLDS,—  
(94 Entries.)

*Judges.*—James Young, Indiana; Joseph Fennell, Bradford; Henry Jennings, Markham.

Best ram, two shears and over, John Miller, Pickering, \$16; 2d do, John Snell, Chinguacousy, \$10; 3d do, George Miller, Markham, \$5.

Best shearling ram, J. & M. Kerby, Norval, imported from England, 1862, \$48; 2d do, John Snell, Chinguacousy, \$10; 3d do, do, do, \$5.

Best ram lamb, George Miller, Markham, \$8; 2nd do, George Jackson, Castlemore, \$4; 3d do, do, do, \$2.

Best 2 ewes, two shears and over, John Miller, Brougham, \$16; 2d do, John Snell, Edmonton, \$12; 3d do, John Randall, Paris, \$6.

Best 2 shearling ewes, Wm. Jeffery, Whitby, \$12; 2d do, John Snell, Edmonton, \$8; 3d do, John Long, London, \$4.

Best 2 ewe lambs, John Snell, Edmonton, \$6; 2d do, George Jackson, Castlemore, \$4; 3d do, do, do, \$2.

SHEEP—MEDIUM WOOLLED.

CLASS XVI.—SOUTH DOWNS.—(99 Entries.)

*Judges.*—J. S. Walker, Beamsville; Martin Johnstone, Barrie; James Maxwell, Paris.

Best ram, two shears and over, F. W. Stone, Guelph, \$16; 2d do, do, do, \$10; 3d do, Jno. Ker, Drummondville, \$5.

Best shearling ram, Edward Jones, Thorold, \$16; 2d do, Dan Tye, Wilmot, \$10; 3d do, F. W. Stone, Guelph, \$5.

Best ram lamb, N. & J. Bethell, St. Catharines, \$8; 2d do, F. W. Stone, Guelph, \$4; 3d do, J. & H. Spencer, Brooklin, \$2.

Best 2 ewes, two shears and over, F. W. Stone, Guelph, \$16; 2d do, A. & H. Spencer, Brooklin, \$12; 3d do, F. W. Stone, Guelph, \$6.

Best 2 shearling ewes, N. & J. Bethell, St. Catharines, \$12; 2d do, Jno. Ker, Drummondville, \$8; 3d do, Edward Jones, Thorold, \$4.

Best 2 ewe lambs, F. W. Stone, Guelph, \$6; 2d do, do, do, \$4; 3d do, J. & H. Spencer, Brooklin, \$2.

CLASS XVII.—CHEVIOTS.—(19 Entries.)

*Judges.*—Thomas Newsom, Frankville; Henry S. Losee, Norwich; Thos. Anderson, Napanee; A. Ryle, Paris.

Best ram, two shears and over, Geo. Miller, Markham, \$16.

Best shearling ram, David Elliott, West Flamboro, \$16; 2nd do, do, do, \$10; 3d do, do, do, \$5.

Best ram lamb, David Elliott, West Flamboro, \$8; 2d do, George Miller Markham, \$4; 3d do, do, do, \$2.

Best 2 ewes, two shears and over, David Elliott, West Flamboro, \$16; 2nd do, George Miller, Markham, \$12; 3d do, do, do, \$6.

Best 2 shearling ewes, David Elliott, West Flamboro, \$12; 2d do, do, do, \$8; 3d do, do, do, \$4.

Best 2 ewe lambs, David Elliott, West Flamboro, \$6; 2nd do, Geo. Miller, Markham, \$4; 3d do, do, do, \$2.

CLASS XVIII.—OTHER MEDIUM WOOLLED  
SHEEP, NOT SOUTHDOWNS OR CHEVIOTS.—  
(46 Entries.)

*Judges.*—The same as for Class xvii.

Best ram, two shears and over, Geo. Miller, Markham, \$16; 2d do, J. & H. Spencer, Brooklin, \$10; 3d do, Daniel Tye, Wilmot, \$5.

Best shearling ram, J. & H. Spencer, Brooklin, imported from England, 1862, \$48; 2d do, Daniel Tye, Wilmot, \$10; 3d do, do, do, \$5.

Best ram lamb, Geo. Miller, Markham, \$8; 2d do, J. & H. Spencer, Brooklin, \$4; 3d do, Geo. Miller, Markham, \$2.

Best two ewes, two shears and over, J. & H. Spencer, Brooklin, \$16; 2d do, Geo. Miller, Markham, \$12; E. G. O'Brien, Barrie, \$6.

Best two shearling ewes, Geo. Miller Markham \$12; 2d do, Edward Jones, Thorold, \$8;

Best two ewe lambs, Geo. Miller, Markham, \$6; 2d do, J. & H. Spencer, Brooklin, \$4; 3d do, Geo. Miller, Markham, \$2.

### SHEEP—FINE WOOLLED,

CLASS XIX.—MERINOES AND SAXONS.—  
(51 Entries.)

*Judges.*—James J. Farley, Belleville; Alpheus Snider, Ancaster; Geo. Bateman, Lindsay.

Best ram, two shears and over, Ed. Arkland, Oshawa, \$16; 2d do, Jacob Rymal, Ryckman's Corner, \$10; 3d do, F. R. Jennings, Cooksville, \$5;

Best shearling ram, Alex. Young, Ryckman's Corners, \$16; 2d do, Jacob Rymal, do, do, \$10; 3d do, Ed. Arkland, Oshawa, \$5.

Best ram lamb, Ed. Arkland, Oshawa, \$8; 2d do, David Messenger, Cooksville, \$4; 3d do, Alex. Young, Ryckman's Corners, \$2.

Best 2 ewes, two shears and over, Ed. Arkland, Oshawa, 16; 2d do, Jacob Rymal, Ryckman's Corners, \$12; 3d do, Alex. Young, do, do, \$6.

Best two shearling ewes, Geo. W. Miller, Grantham, \$12; 2d do, Ed. Arkland, Oshawa, \$8; 3d do, Alex. Young, Ryckman's Corners, \$4.

Best two ewes lambs, Alex. Young, do, do, \$6; 2d do, Jacob Rymal, do, do, \$4; 3d do, F. R. Jennings, Cooksville, \$2.

NOTE BY JUDGES.—The Judges would respectfully suggest that the Spanish and French Merinos be henceforth made separate classes.

CLASS XX.—OTHER FINE WOOLLED SHEEP, NOT MERINOS OR SAXONS.—(11 Entries.)

*Judges* the same as for Class xix.

REPORT.—The Judges find none entered that they consider come within the description, and have therefore awarded no prizes.

CLASS XXI.—FAT SHEEP.—(24 Entries.)

*Judges.*—Robert Kirkwood, Hamilton; Robert Best, Niagara, Henry Andrews, Kingston.

Best two fat wethers, John Snell, Edmonton, \$12; 2d do, F. R. Jennings, Cooksville, \$8; 3d do, do, do, \$4.

Best two fat ewes, Christopher Walker London, \$12; 2d do, David Rountree, York Township, \$8; 3d do John Snell, Edmonton, \$4.

### PIGS—LARGE BREEDS.

CLASS XXII.—YORKSHIRES.—(45 Entries.)

*Judges.*—Walter Ker, Stamford; Robert Garbutt, Belleville; Simeon Crysedale, Belleville; A. K. Scholfield, Humbertson.

Best boar, one year and over, C. A. Jordison, Belleville, \$15; 2d do, J. F. Converse Jefferson County, N. Y., \$10; 3d do, L. A. Sovereign, Paris, \$6.

Best boar under one year, C. A. Jordison, Belleville, \$10; 2d do, J. P. Wheler, Scarboro, \$6; 3d do, C. A. Jordison, Belleville, \$4.

Best breeding sow, one year and over, Jas. Ford, Drumquin, Halton, \$10; 2d do, J. P. Wheler, Scarboro, \$7; 3d do, C. A. Jordison, Belleville, \$4.

Best sow, under one year old, J. P. Wheler, Scarboro, imported from England, 1862, \$10; 2d do, Brodie & Campbell, Jefferson County, N. Y. \$4; 3d do, C. A. Jordison, Belleville, \$3.

CLASS XXIII.—LARGE BERKSHIRES.—  
(18 Entries.)

*Judges.*—The same as for Class xxii.

Best boar, one year and over, John Davey, Leskard, \$15.

Best boar, under one year, James Maines, Brampton, \$10; 2d do, John Gibb, Lindsay, \$6.

Best breeding sow, one year and over, Geo. Morton, Morton, \$10.

Best sow under one year old, James Maines, Brampton, \$4; 2d do, Geo. Morton, Morton, \$4; 3d do, do, do, \$3.

CLASS XXIV.—ALL OTHER LARGE BREEDS.—  
(14 Entries.)

*Judges.*—The same as for Class xxii

Best boar, one year and over, Geo. Miller, Markham, \$15; 2d do, P. R. Pamer, Thur-



low, \$10; 3d do, A. H. Fenwick, Cashel, \$6.  
Best boar, under one year. P. R. Palmer, Thurlow, \$10; 2d do, Geo. Miller, Markham, \$6.

Best breeding sow, one year and over, Geo. Markham \$10; 2d do, P. R. Palmer, Thurlow, Miller, \$7.

Best sow under one year old, Geo. Miller, Markham, imported from England, 1862, \$10; 2d do, Jonas S. Barnes, St. Thomas. \$4.

#### PIGS—SMALL BREEDS.

##### CLASS XXV.—SUFFOLKS.—(39 Entries.)

*Judges.*—Malcolm McArthur, Lobo; Duncan Christie, Utica; Alex. Bartlett, Windsor; Wm. Crowder, Morpeth.

Best boar, one year and over, James Maines, Brampton, \$15; 2d do, Francis Winter, Cooksville \$10; John Dixon, Etobicoke, \$6.

Best boar, under one year, James Maines, Brampton, imported from England, 1862, \$30; 2d do, Geo. Savage, Burnhamthorpe, \$6; 3d do, Henry Batiell, Grafton, \$4.

Best breeding sow, one year and over, Geo. Savage, Burnhamthorpe, \$10; 2d do, Peter Metler, Jr., Pelham, \$7; 3d do, John McGlashan, Pelham, \$4.

Best sow, under one year old, Geo. Savage, Burnhamthorpe, \$5; 2d do, Peter Metler, Jr., Pelham, \$4; 3d do, Thomas Mills, Albion, \$3.

##### CLASS XXVI.—IMPROVED BERKSHIRES.—(55 Entries.)

*Judges.*—The same as for Class xxv.

Best boar, 1 year and over, Thomas Penton, Paris, \$15; 2d do, David Buchan, do, \$10.

Best boar, under 1 year, David Buchan, Paris, \$10; 2d do, Jno. Foott, Port Hope, \$6; 3d do, Jno. Randall, Paris, \$4.

Best breeding sow, 1 year and over, Jno. Ross, Toronto, \$10; 2d do, David Buchan, Paris, \$7; 3d do, Thos. Penton, do, \$4.

Best sow under 1 year old, Jno. Ross, Toronto, \$5; 2d do, Thos. Penton, Paris, \$4; 3d do, R. L. Denison, Toronto, \$3.

##### CLASS XXVII.—ALL OTHER SMALL BREEDS.—(37 Entries.)

*Judges.*—The same as for Class xxv.

Best boar, 1 year and over, Jas. Maines, Brampton, imported from England 1862, \$45; 2d do, Jno. Ingleson, Toronto, \$10; 3d do, James Cowan, Galt, \$6.

Best Boar under 1 year, Jas. Maines,

Brampton, imported from England, 1862, \$30; 2d do, Jas. Cowan, Galt, \$6; 3d do, do, do, \$4.

Best breeding sow, 1 year and over, Jas. Cowan, Galt, \$10; 2d do, Daniel Tye, Wilmet, \$7.

Best sow under 1 year old, Rob Dorsey, Summerville, \$5; 2d do, do, do, \$4; 3d do, Jas. Cowan, Galt, \$3.

#### CLASS XXVIII.—POULTRY.—(250 Entries.)

*Judges.*—J. D. Humphreys, Toronto; Alex. Kerr, London; Robert Hardinge, Kingston.

Best pair of white dorkings, John Bogue, London, \$4; 2d do, S. Peters, senr, London, \$2.

Best pair of spangled dorkings, John Bogue, London, \$4; 2d do, S. Peters, senr, London, \$2.

Best pair of Black Polands, George Scott, Woburn, \$4; 2d do, Charles Nourse, Whitby \$2.

Best pair of white Polands, no first awarded; 2d do, Jno. Bogue, London, \$2.

Best pair of golden Polands, John Bogue, London, \$4; 2d do, do, do, \$2.

Best pair of silver Polands, John Ker, Drummondville, \$4; 2d do, James Metcalf, Eglinton, \$2.

Best pair of game fowls, Samuel Baird, Toronto, \$4; 2d do S. Peters, senr., London, \$2.

Best pair of Jersey blues, S. Peters, London, \$4; 2d do, John Bogue, London, \$2.

Best pair of Cochin China, Shanghai, Canton, or Bramah Pootra fowls, S. Peters, senr, London, \$4; 2d do, John Ker, Drummondville, \$2.

Best pair of black Spanish fowls, Jno. Bogue, London, \$4; 2d do, Jas. Metcalf, Eglinton, \$2; Charles Nourse, Whitby, highly commended.

Best pair of black Java fowls, no first prize awarded; 2d do John Bogue, London, \$2.

Pair of Bolton bays, no prize awarded.  
Best pair of Bolton grays, John Bogue, London, \$4; 2d do, do, do, \$2.

Best pair of Hamburg fowls, S. Peters, senr., London, \$4; 2d do, G. D. James, Toronto, \$2.

Best pair of Dominique fowls, Philip Armstrong, Toronto, \$4; 2d do, John Ker, Drummondville, \$2.

Best pair of feather legged bantams, Abel

Wilcox, Richview, \$2; 2d do, S. Peters, senr., London, \$1.

Best pair of smoothed-legged bantams, S. Peters, London, \$2; 2d do, do, do, \$1.

Best pair of turkeys, (white) Jno. Ker, Drummondville, \$5.

Best pair of turkeys (coloured) Jno. Bogue, London, \$4; 2d do, John Ker, Drummondville, \$2.

Best pair of wild turkeys, John Bogue, London, \$4.

Best pair of large geese, John Bogue, London, \$4; 3d do, do, do, \$2.

Best pair of Bremen geese, John Bogue, London, \$4; 2d do, do, do, \$2.

Best pair of Chinese geese, John Ker, Drummondville, \$4.

Best pair of Mucovy ducks, John Ker, Drummondville, \$4; 2d do, John Bogue, London, \$2.

Best pair of common ducks, John Bogue, London, \$4; 2d do, Wm. Forfar, Eilesmere, \$2.

Best pair of Aylesbury ducks, S. Peters, London, \$4; 2d do, John Bogue, London, \$2.

Best pair of Poland ducks, John Bogue, London, \$4; 2d do, John Shaw, Toronto, \$2.

Best pair of Rouen ducks, S. Peters, senr., London, \$4; 2d do, do, do, \$2.

Best pair of Guinea fowls, Jno. Ker, Drummondville, \$4; 2d do, Jno. Bogue, London, \$2.

Best collection of pigeons, Andrew J. Riddell, Toronto, \$4; 2d Geo. Hornshaw, Toronto, \$2.

Best lot of poultry, in one pen, and owned by the exhibitor, John Bogue, London, \$6.

Best collection of poultry in various classes by one exhibitor, John Bogue, London, \$8.

Best pair of rabbits, P. C. Abbott, Toronto, \$2; Extra prize, Jas. Maines, Brampton, \$1.

Best lot of rabbits, P. C. Abbott, Toronto, \$4.

#### THE FERGUS MEDALS.

Best pair (cock and hen) of domestic fowls, any breed, prize by late Hon. Adam Fergusson, Jno. Ker, Drummondville, Silver Medal; 2d do, Chas Nourse, Whitby, Silver Medal.

#### EXTRA PRIZES.

Frizzled fowls, John Ker, Drummondville, \$2.

Wild geese, John Ker, Drummondville, \$2.

Gold and silver sea bright bantams, S. Peters, senr., London, \$2.

## AGRICULTURAL PRODUCTIONS.

### CLASS XXIX.—GRAINS, SEEDS, &c.—(460 Entries.)

*Judges*.—E. A. McNaughton, Newcastle; Sheriff Moderwall, Ingersoll; D. Sutherland, Newmarket; J. A. Baker, Paris; John Jarvis, Ingersoll.

The Canada Company's Prize for the best 25 bushels of Fall Wheat, the produce of Canada West, being the growth of the year 1862. Each sample to be of one distinct variety, pure and unmixed, of the best quality for seed, and not to be tested merely by weight. The prize to be awarded to the actual grower only of the wheat, which becomes the property of the Association, for distribution to the County Societies for seed, James Freeman, Hamilton, \$100; 2nd do, by the Association, John Mitchell, Mono Mills, \$40; 3rd do, John Rose, Glenmorris, \$20.

Best two bushels of white winter wheat, Phil. Bartholomew, Ringwood, \$10; 2nd do, Seth Heacock, Kettleby, \$8; 3rd do, Ben. Johnston, Islington, \$6; 4th do, William Jackes, Eglinton, \$4.

Best two bushels of red winter wheat, Jas. Trann, Belford, \$10; 2nd do, C. W. Thompson, Niagara, \$8.

Best two bushels of white spring wheat, Seth, Heacock, Kettleby, \$10; 2nd do, John Mitchell, Mono Mills, \$8; 3rd do, David Armstrong, Leith, \$6; 4th do, Jas. Hanning, Morriston, \$4.

Best two bushels red spring wheat, Wm. Westington, Coldsprings, \$10; 2nd do, John Mitchell, Mono Mills, \$8; 3rd do, John Wood, Bradford, \$6; 4th do, Hugh Reid, Owen Sound, \$4.

Best two bushels of barley, (two rowed) James Gibson, Ancaster, \$6; 2nd do, A. M. D. Lockhart, Stromness, \$4; 3rd do, Alex. Gerrie, Dundas, \$2; 4th do, John Renton, Carluke, Vol. Transactions.

Best two bushels of barley (6 rowed), Jno. Mitchell, Mono Mills, \$6; 2nd do, James Trann; Belford, \$4; 3rd do, James Hanning, Morriston, \$2; 4th do, Robert Worm, Lippincott, Trans.

Best two bushels of rye, J. D. Lafferty, Hamilton, \$6; 2nd do, Alex. Shaw, Toronto, \$4; 3rd do, P. R. Palmer, Thurlow, \$2; 4th do, Morris Thomas, Mohawk, Trans.

Best two bushels of oats (white) Uriah Young, Bangor, \$6; 2nd do, James Gibson, Ancaster, \$4; 3rd, do, Phil. Bartholomew,



Ringwood, \$2; 4th do, Alex. Gerrie, Dundas, Trans.

Best two bushels of oats (black) Alex. Gerrie, Dundas, \$6; 2nd do, Alexander Gerrie, Dundas, \$4; 3rd do, John Ross, Toronto, \$2.

Best two bushels of field peas, Wm. Forfar, Ellesmere, \$6; 2nd do, Samuel Wood, Islington, \$4; 3rd do, Thomas Gibson, Middleton, \$2; 4th do, Wm. Gordon, Whitby, Trans.

Best two bushels of Marrowfat peas, D. Rowntree, Carleton, \$6; 2nd do, James R. Todd, Brampton, \$4; 3rd do, Mrs. Harper, Aurora, \$2.

Best two bushels of tares, James Story, Whitby, \$6; 2nd do, Robert Worm, Lippincott, \$4; 3rd do, H. Jennings, Markham, \$2; 4th do, Adam Mather, Islington, Trans.

Best bushel of white field beans, James Preston, Esquimes, \$6; 2nd do, Coridon Lewis, Salford, \$4; 3rd do, R. C. Gill, Colborne, \$2.

Best two bushels Indian Corn in the ear, white, H. J. Brown, Niagara, \$6; 2nd do, G. J. Miller, Virgil, \$4; 3rd do, Alex. Gerrie, Dundas, \$2; 4th do, R. Rispin, London, Trans.

Best two do, yellow, W. A. F. Currie, Niagara, \$6; 2nd do, G. J. Miller, Virgil, \$4; 3rd do, Alex. Gerrie, Dundas, \$2; 4th do, R. L. Denison, Toronto, Trans.

Best bushel of timothy seed, James Gibson, Ancaster, \$6; 2nd do, C. Lewis, Salford, \$4; 3rd do, H. Girouard, Hamilton, \$2; 4th do, H. Jennings, Markham, Trans.

Best bushel of flax seed, P. Bartholomew, Ringwood, \$6; 2nd do, W. Benham, Guelph, \$4; 3rd do, J. R. Todd, Brampton, \$2.

Best bushel mustard seed, G. Girouard, Hamilton, \$6.

Best Swedish turnip seed, from Transplanted bulbs, not less than 20 pounds, R. C. Gill, Colborne, \$6; 2nd do, James Lawrie, Malvern, \$4.

Best 14 lbs. white Belgian field carrot seed, Robert Beith, Darlington, \$6; 2nd do, R. C. Gill, Colborne \$4.

Best 12 lbs. long red mangel wurzel seed, R. C. Gill, Colborne, \$6; 2nd do, H. Girouard, Hamilton, \$4.

Best 12 lbs. yellow globe mangel wurzel seed, John Pratt, Cobourg, \$6; 2nd do, R. C. Gill, Colborne, \$4.

Best bale of hops, not less than 112 pounds, John Russell, London, \$20; 2nd do, Alex. Russell, London, \$12; 3rd do, John Stephenson, London, \$8.

Best bushel of horse or tick beans, W. Jackson, York Mills, \$6; 2nd do, John Hogg, York Mills, \$3.

Best bushel of buckwheat, Ben Johnston, Islington, \$4; 2nd do, P. Bartholomew, Ringwood, \$2; 3rd do, P. R. Palmer, Thurlow, Trans.

REMARKS BY JUDGES.—The judges of grains and seeds have pleasure in presenting their report. Upon former occasions much difficulty has arisen from the erroneous classification of various articles in this class, but this year very few instances have been found where these mistakes have been made. Where such were found we took it upon ourselves to set them to rights. In some of the sections we found a great deficiency both in quantity and quality. Considering that one of the objects of the Association is to encourage competition by awarding prizes only to such articles as are worthy of them, we have in one or two instances not awarded any prize on account of the articles not coming up to the standard of quality, but we are happy to say that these are exceptional cases. In other instances we have withheld prizes for want of sufficient quantity to comply with the rules of the Association.

#### CLASS XXX.—ROOTS AND OTHER HOED FIELD CROPS.—(386 Entries.)

Judges.—John Menzies, Almonte; John Randall, Newmarket; Walter Riddell, Cobourg.

Best bushel of pink-eyed potatoes, John Ross, Toronto, \$3; 2nd do, Richard Rispen, London, \$2; 3rd do, Adam Mather, Islington, \$1.

Best bushel cup potatoes, John McCallum, Beverly, Wentworth, \$3; 2nd do, John Ross, Toronto, \$2; 3rd do, Robert Worm, Lippincott, \$1.

Best bushel garnet Chilis, Wm. Wilson, Islington, York, \$3; 2nd do, Robert Worm, Lippincott, \$2; 3rd do, James Cowan, Galt, \$1.

Best bushel white potatoes, Wm. Burgess, Mimico, \$3; 2nd do, Richard Rispen, London, \$2; 3rd do, Alex. Gerrie, Dundas, Wentworth, Trans.

Best bushel red do, Trueman McEvers, Cambourn, Northumberland, \$3; 2nd do, Alex. Gerrie, Dundas, \$2; 3rd do, W. B. Bartlett, Toronto, Trans.

Best bushel blue, Wm. Lea, York Tp. \$3;

2nd do, Adam Mather, Islington, \$2; 3rd do, John Moore, Islington, Trans.

Best bushel of any other sort, Thomas Ironfield, Toronto, \$3; 2nd do, Robert Worm, Lippincott, \$2; 3rd do, Alex. Shaw, Toronto, Trans.

Best collection of field potatoes, a peck of each sort, [named] Joshua Norrish, Eden Mills, Nassagawega, \$4; 2nd do, Adam Mather, Islington, \$3; 3rd do, Patrick R. Wright, Cobourg, \$2.

Best bushel Swede turnips, Wm. Burgess, Mimico, \$3; 2nd do, James Leslie, Toronto, \$2; 3rd do, Robt. Worm, Lippincott, \$1.

Best bushel white globe turnips, Thomas Ironfield, Toronto, \$3; 2nd do, C. C. Small, Toronto, \$2; 3rd do, George Vair, Yorkville, Trans.

Best bushel Aberdeen yellow turnips, C.C. Small, Toronto, \$3.

Best 20 roots red carrots, Jno. Muir, Scarborough, \$3; 2nd do, W. R. Bartlett, Toronto, \$2; 3rd do, Joshua Sisley, Scarborough, \$1.

Best 20 roots white or Belgian carrots, W. R. Bartlett, Toronto, \$3; 2nd do, Jno. Muir, Scarborough, \$2; 3rd do, James Young, Chester, York, \$1.

Best 12 roots mangel wurzel (long red), Robert Worm, Lippincott, \$3; 2nd do, Wm. Burgess, Mimico, \$2; 3rd do, Wm. Benham, Guelph, \$1.

Best 12 roots red Globe mangel wurzel, Wm. Burgess, Mimico, \$3; 2nd do, E. W. Thomson, Carlton West, \$2; 3rd do, R. C. Gill, Colborne, Northumberland, Trans.

Best 12 roots yellow Globe mangel wurzel, Wm. Burgess, Mimico, \$3; 2nd do, Robert Worm, Lippincott, \$2; 3rd do, John Ross, Toronto, \$1.

Best 12 roots long yellow mangel wurzel, W. Burgess, Mimico, \$3; 3rd do, Wm. Benham, Guelph, \$2; 3rd do, R. C. Gill, Colborne, Trans.

Best 12 roots of kohl rabi, Richard Guthrie, Toronto, \$3; 2nd do, T. H. Ince, Toronto, \$2; 3rd do, Gage J. Miller, Virgil, Lincoln, \$1.

Best 12 roots of sugar beet, Wm. Burgess, Mimico, \$3; 2nd do, R. C. Gill, Colborne, \$2; 3rd do, Joshua Sisley, Scarborough, \$1.

Best 20 roots parsnips, Wm. Burgess, Mimico, \$3; 2nd do, Wm. Benham, Guelph, \$2; 3rd do, W. R. Bartlett, Trans.

Best 20 roots chicory, Leonard Pears, Yorkville, \$3; 2nd do, G. Pears, Toronto, \$2; 3rd do, Wm. Burgess, Toronto, Trans.

Best 2 large squashes for cattle, William Wilson, Islington, \$3; 2nd do, George Morse, Toronto, \$2; 3rd do, Thomas Berney, Yorkville, \$1.

Best 2 mammoth field pumpkins, Wm. Lea, York, \$3; 2nd do, C. C. Small, Toronto, \$2.

Best 4 common yellow field do. Wm. Lea, York, \$3; 2nd do, Wm. Wilson, Islington, \$2; 3rd do, R. L. Denison, Toronto, Trans.

Best 20 lbs of tobacco leaf, growth of Canada West, Edward Lewis, Yorkville, \$3; 2nd do, Richard Guthrie, Toronto, \$2; 3rd do, R. C. Gill, Colborne, Trans.

Best broom corn brush, 28 lbs, Charles W. Thompson, Niagara, \$3.

### *The Canada Company's Prize for Flax.*

Best 112 lbs of flax, scutched, Chas. Mitchell, Norval, \$24; 2nd do, by the Association, do, do, \$16; 3rd do, do, Jno. Rea, Port Stanley, \$8.

EXTRA PRIZES.—F. W. Stone, Guelph, sample of flax in raw state, \$1; Richard Guthrie, Toronto, tobacco plant, \$1; George Murray, Yorkville, variety of seedling potatoes, \$1; John Nicholson, Ashport, York, Basket Willows, \$1.

## HORTICULTURAL PRODUCTS.

CLASS XXXI.—FRUIT.—(599 Entries.)

Judges,—George Sheppard, Montreal; Geo. Laing, Hamilton; John Gray, Toronto; Wm. Gray, Woodstock.

Best 20 varieties of apples, named, 6 of each, D. W. Beadle, St. Catharines, \$6; 2d do, R. Stibbard, Eglinton, \$5; 3d do, Ellwanger & Barry, Rochester, N. Y., \$4.

Best 12 table apples, named, fall sort, Elias Snider, Eglinton, \$4; 2d do, Samuel Wood, Islington, \$3; 3d do, Fred. Geo. Nash, Niagara, \$2.

Best 12 table apples, named, winter sort, S. J. J. Brown, Niagara, \$4; 2d do, Robert Warren, Niagara, \$3; 3d do, Robert Stibbard, Eglinton, \$3.

Best 12 baking apples, named, fall, James Lesslie, Toronto, \$4; 2d do, John Freed, Hamilton, \$3; 3d do, J. M. Grove, Colborne, \$2.

Best baking apples, winter, S. J. J. Brown, Niagara, \$4; 2d do, E. C. Fearnside, Hamilton, \$3; 3d do, J. M. Hirschfelder, Toronto, \$2.

Best 20 varieties of pears, named, three of each, Ellwanger & Barry, Rochester, N. Y., \$6; do, Bruce & Murray, Hamilton, \$6; 2d



do, D. W. Beadle, St. Catharines, \$5; 3d do, John Freed, Hamilton, \$4.

Best 12 table pears, named, fall sort, D. W. Beadle, St. Catharines, \$4; 2d do, R. N. Ball, Niagara, \$3; 3d do, Bruce & Murray, Hamilton, \$2.

Best 12 table pears, named, winter sort, Ellwanger & Barry, Rochester, N. Y., \$4; 2d do, Geo. Leslie, Toronto, \$3; 3d do, Bruce & Murray, Hamilton, \$2.

Best 12 plums, dessert, J. D. Humphreys, Toronto, \$3; 2d do, Geo. Tattle, Yorkville, \$2; 3d do, Jas. Boulton, Eramosa, \$1.

Best 12 baking plums, named, Wm. Benham, Guelph, \$3; 2d do, John Brown, Toronto, \$2; 3d do, J. Hirschfelder, Toronto, \$1.

Best quart of damsons, English, M. C. Nickerson, Port Dover, \$3; 2d do, Phillip Armstrong, Toronto, \$3; 3d do, Geo. Tattle, Yorkville, \$1.

Best 12 peaches, grown in open air, named, John Freed, Hamilton, \$3; 2d do, F. G. Nash, Niagara, \$2; 3d do, Thos. Daniels, Yorkville, \$1.

Best 10 varieties of peaches grown in the open air, 3 of each, John Freed, Hamilton, \$4; 2d do, Robert Warren, Niagara, \$3; 3d do, Wolverton H. Smith, Grimsby, \$2.

Best 12 quinces, W. A. Currie, Niagara, \$2; 2d do, H. J. Brown, Niagara, \$1 50; 3d do, S. J. J. Brown, Niagara, Trans.

Best 3 bunches of golden or white grapes, grown under glass, Bruce & Murray, Hamilton, \$4; 2d do, Samuel Ashby, Toronto, \$3; 3d do, Hon. W. Cayley, Toronto, \$2.

Best 3 clusters of black grapes, grown under glass, Bruce & Murray, Hamilton, \$4; 2d do, Samuel Ashby, Toronto, \$3; 3d do, Hon. W. Cayley, Toronto, \$2.

Best 4 clusters black grapes, grown in open air, W. H. Read, Port Dalhousie, \$3; 2nd do, Solomon Hill, Beamsville, \$2; 3rd do, Bruce & Murray, Hamilton, \$1.

Best 4 clusters white grapes, grown in open air, H. M. Switzer, Palermo, \$3; 2nd do, W. H. Read, Port Dalhousie, \$2; 3rd do, W. A. F. Currie, Niagara, \$1.

Best and heaviest 2 clusters grapes, grown under glass, Samuel Ashby, Toronto, \$4; 2nd do, Hon. W. Cayley, Toronto, \$3; 3rd do, Charles Arnold, Paris, \$2.

Best and heaviest two bunches grapes, open air, W. H. Read, Port Dalhousie, \$3.

Best collection of grapes, grown in open air, 2 clusters of each sort, named, W. H. Read, Port Dalhousie, \$4; 2nd do, Charles

Arnold, Paris, \$3; 3rd do, Bruce & Murray, Hamilton, \$2.

Best 3 bottles wine, made from the grape, John C. Kilborne, Beamsville, \$3; 2nd do, Judge Harrison, Toronto, \$2; 3rd do, John C. Kilborne, Beamsville, \$1.

Best green flesh melon, J. C. Small, Toronto, \$2; 2nd do, W. Burgess, Mimico, \$1 50; 3rd do, Chris. Young, Yorkville, \$1.

Best water melon, H. Girouard, Hamilton, \$2; 2nd do, S. J. J. Brown, Niagara, \$1 50; 3rd do, Wolverton & Smith, Grimsby \$1.

Best 6 citrons for preserving, Richard Rispin, London, \$2; 2nd do, John Hogg, Yorkville, \$1 50; 3rd do, R. Stibbard, Eglinton, Transactions.

Best 6 nectarines, Bruce & Murray, Hamilton, \$2; 2nd do, Judge Harrison, Toronto, \$1 50; 3rd do, R. N. Ball, Niagara, \$1.

Best display of fruit, the growth of exhibitor, distinct from other entries, not more than 3 specimens of each sort, George Leslie, Toronto, \$9; 2nd do, D. W. Beadle, St. Catharines, \$6; 3rd do, Charles Arnold, Paris, \$3.

EXTRA PRIZES.—E. C. Fearnside, Hamilton, Siberian crabs, 50c. J. D. Humphreys, Toronto, red currants, 50c; do, do, white currants, 50c; do, do, black currants, 50c; do, do, golden crabs, 50c. W. H. Miller, Toronto, crab apples, 50c. C. F. Bell, Toronto, crab apples, 50c. Hon. H. H. Killaly, Toronto, grapes and peaches bearing in pots, 50c. Do. collection of grapes grown under glass, \$1. John Gray, Toronto, collection of pears, 50c. Charles Arnold, Paris, collection of plums, 50c. George Tattle, Yorkville, red currants, 5c.

#### CLASS XXXII.—GARDEN VEGETABLES.— (451 Entries.)

Judges.—Geo. Baxter Kingston; John Beat-  
tie, Nichol; Peter C. Servos, Niagara.

Best 12 roots of salsify, Edward Lewis, Yorkville, \$2; 2nd do, Geo. Tattle, Yorkville, \$1 50; 3rd do, Geo. Vair, Yorkville, \$1.

Best 3 heads brocoli, Richard Guthrie, Toronto, \$2; 2nd do, do, \$1 50; 3d do, Wm. Burgess, Mimico, \$1.

Best 3 heads cauliflower, Ed. Lewis, Yorkville, \$2; 2nd do, Richard Guthrie, Toronto, \$1 50; 3rd do, J. C. Small, Toronto, \$1.

Best 2 heads cabbage [summer] James Fleming, Toronto, \$2; 2nd do, A. W. Taylor, Hamilton, \$1 50; 3rd do, G. Tattle, Yorkville, \$1.

Best 3 heads of cabbage (winter) Richard Guthrie, Toronto, \$2; 2nd do, Wm. Burgess, Mimico, \$1.50; 3rd do, Jas. R. Todd, Brampton, \$1.

Best 4 sorts of winter cabbage, including savoy, 1 of each sort, W. Burgess, Mimico, \$3; 2nd do, W. Holden, Yorkville, \$2; 3rd do, R. Guthrie, Toronto, \$1.

Best 3 heads red Cabbage, A. W. Taylor, Hamilton, \$2; 2nd do, W. Burgess, Mimico, \$1.50; 3rd do, R. Guthrie, Toronto, \$1.

Best 12 carrots for table, long red, Samuel Ashby, Toronto, \$2; 2nd do, W. Burgess, Mimico, \$1.50; 3rd do, W. Benham, Guelph, \$1.

Best 12 early horn carrots, J. C. Daniels, Yorkville, \$2; 2nd do, James Young, Chester, \$1.50; 3rd do, Judge Harrison, Toronto, \$1.

Best 12 table parsnips, Alfred Strowger, Guelph, \$2; 2nd do, W. Benham, Guelph, \$1.50; 3rd do, G. S. Armstrong, Fergus, \$1.

Best 6 roots of white celery, James Best, Ashport, \$2; 2nd do, W. Daniels, Yorkville, \$1.50; 3rd do, G. Tatler, Yorkville, \$1.

Best 6 roots red celery, James Wildes, Hamilton, \$2; 2nd do, John Nicholson, Ashport, \$1.50; 3rd do, W. Daniels, Yorkville, \$1.

Best dozen capsicums (ripe), R. C. Gill, Colborne, \$2; 2nd do, Judge Harrison, Toronto, \$1.50; 3rd do, J. M. Grover, Colborne, \$1.

Best collection of capsicums (ripe,) 6 of each sort, A. W. Taylor, Hamilton, \$3; 2nd do, C. C. Fearnside, Hamilton, \$2; 3rd do, R. C. Gill, Colborne, \$1;

Best 3 egg plant fruit, purple, W. A. F. Currie, Niagara, \$2; 2nd do, R. Currie, St. Catharines, \$1.50; 3rd do, H. Girouard, Hamilton, \$1.

Best 12 tomatoes, [red] J. D. Humphreys, Toronto, \$2; 2nd do, Rev. Mr. Cox, Brampton, \$1.50; 3rd do, Edward Lewis, Yorkville, \$1.

Best 12 tomatoes, [yellow] W. R. Bartlett, Toronto, \$2; 2nd do, R. Rispin, London, \$1.50; 3rd do, H. Girouard, Hamilton, \$1.

Best assorted collection of tomatoes, 6 each of large sorts, and 12 each of small sorts, E. C. Fearnside, Hamilton, \$3; 2nd do, Thos. Ironfield, Toronto, \$2; 3rd do, J. D. Humphreys, Toronto, \$1.

Best 12 blood beets, long, Gage J. Miller, Virgil, \$2; 2nd do, Sam Ashby, Toronto, \$1.50; 3rd do, James Fleming, Toronto, \$1.

Best peck of white onions, A. W. Taylor, Hamilton, \$2; 2d do, Henry Girouard, Ham-

ilton, \$1.50; 3rd do, James Wildes, Hamilton, \$1.

Best peck of yellow onions, A. W. Taylor, Hamilton, \$2; 2nd do, R. Rispin, London, \$1.50; 3rd do, James Wildes, Hamilton, \$1;

Best peck of red onions, John Young, Virgil, \$2; 2d do, R. Rispin, London, \$1.50; 3rd do, James Wildes, Hamilton, \$1.

Best 12 white turnips [table] Thomas Ironfield, Toronto, \$2; 2nd do, A. W. Taylor, Hamilton, \$1.50; 3rd do, George Vair, Toronto, \$1.

Best 12 yellow turnips [table] A. W. Taylor, Hamilton, \$2; 2nd do, Thomas Ironfield, Toronto, \$1.50.

Best 12 ears sweet corn, John Young, Virgil, \$2; 2nd do, G. J. Miller, Virgil, \$1.50; 3rd do, James Durand, Kingston, \$1.

Best and greatest variety of potatoes, half peck of each sort, named, Richard Guthrie, Toronto, \$3; 2nd do, Samuel Ashby, Toronto, \$2; 3rd do, A. W. Taylor, Hamilton, \$1.

Best 3 squashes, [table] S. J. J. Brown, Niagara, \$2; 2nd do, James Fleming, Toronto, \$1.50; 3rd do, R. L. Denison, Toronto, \$1.

Best and greatest variety of vegetables, [distinct from other entries] each kind named, George Tattle, Yorkville, \$4; 2nd do, A. W. Taylor, Hamilton, \$3; 3rd do, James Best, Ashport, \$2.

EXTRA PRIZES.—Curled parsley, Wm. Benham, Guelph, 50c. Three kinds of kidney beans, J. D. Humphreys, Toronto, 50c. Dish of Russian peas, and dish of asparagus beans, J. M. Hirschfelder, Toronto, 50c. Asparagus beans, George Tattle, Yorkville, 50c. Variety of dried garden herbs, George Tattle, Yorkville, 50c. Dish of yard beans, long pole, Jas. Best, Ashport, 50c. Dish of green peas, J. D. Humphreys, Toronto, 50c. Brace of cucumbers, Geo. Leslie, Toronto, 50c. Dioscorea batatas, Bruce & Murray, Hamilton, 50c. Dioscorea batatas, Judge Harrison, Toronto, 50c. Half-peck champion of England peas, George Tattle, Yorkville, 50c. Green peppers, J. C. Small, Toronto, 50c. Bassano turnip beet, J. C. Daniels, Yorkville, \$1. Best Siberian crabs, Robert Stibbard, Eglinton, 50c. Strawberry tomato in the husk, James Lesslie, township of York, 50c. Collection of gourds, J. D. Humphreys, Toronto, 50c.

(Prize List to be concluded in next number.)



### Miscellaneous.

**AGRICULTURE AND WOMEN.**—An American gentleman who lately visited England was struck by the interest manifested by ladies, including those of the highest rank, in agriculture. One of these, the Duchess of Portland, exhibited perfect familiarity with the minutest details of farm management and work, showing her American guest over the whole of the Duke's large estate, and explaining to him the various processes and methods of cultivation. We could wish that our American ladies would adopt one of the few aristocratic tastes and habits which sit gracefully upon republican women, and which would be of equal advantage to the interests of agriculture and to their own delicate physical organizations. A great deal of cant is uttered in these days about the mission of woman, but whenever we hear an attenuated, dyspeptic female talking in this wise, we feel sure that the daily handling of a broomstick, in a peaceable manner, or the charge of a kitchen garden, would soon put her upon the track most useful for herself and for society. When Rome was young and virtuous, the kitchen garden was always placed under the care of the mother of the family. In Sparta, the women, fit to be the mothers of heroes, cultivated the soil, whilst the men were fighting the battles of their country. Indeed, from the earliest period in the annals of our race, woman has aided by her counsels, and sometimes by her labors, in bringing agriculture to a state of perfection. The laws which Osiris gave to Egypt were not as valuable to that country as those precepts in agriculture, those instructions in embankments, irrigations and drainings, which Isis, his Queen, gave to the Egyptians, and which enabled them to derive so much benefit from the deposits of the Nile. Ceres, deified by the Greeks, made her people acquainted with the use of wheat, and the mode of cultivating it. To the Empress of China we are indebted for the mulberry tree and the rearing of silk worms. Woman of late years has demonstrated her capacity of shining in many spheres once considered the peculiar province of man. Miss HERSCHEL has discovered comets; Mrs. SOMERVILLE laid open the mathematical structure of the universe; some have analyzed the chemical relations of nature in the laboratory, and others investigated the laws of social relations. With such a great amount and variety of power, may we not augur the most beneficial results to agriculture, if the women of our country, by their sympathy, encouragement and co-operation, by their studies and counsels, would prove themselves, as did the women of old, helpmeets to him whom God has ordained to cultivate the earth?—*Baltimore American.*

**NATURAL BAROMETER.**—The spider, says an eminent naturalist, is almost universally regarded with disgust and abhorrence; yet, after all, it is one of the most interesting, if not the most useful, of the insect tribe. Since the days of Robert Bruce, it has been celebrated as a model of perseverance, while in industry and ingenuity it has no rival among insects. But the most extraordinary fact in the natural history of this insect, is the remarkable presentiment it appears to have of an approaching change in the weather. Barometers, at best, only foretell the state of the weather with certainty for about twenty-four hours, and they are very frequently fallible guides, particularly when they point to *settled fair*. But we may be sure that the weather will be fine twelve or fourteen days, when the spider makes the principal threads of its web very long. This insect, which is one of the most economical animals, does not commence a work requiring such a great length of threads, which it draws out of its body, unless the state of the atmosphere indicates with certainty that this great expenditure will not be made in vain. Let the weather be ever so bad, we may conclude with certainty that it will soon change to be *settled fair* when we see the spider repair the damages which his web has received. It is obvious how important this infallible indication of the state of the weather must be in many instances, particularly to the agriculturist.

**A PLEA FOR ROOTS.**—A correspondent of the *Rural New Yorker*, thus urges farmers to cultivate roots:—"A few acres of roots for home consumption should be raised on every farm. In behalf of horses, cattle, sheep, and swine, I plead earnestly for roots. Fed as cattle are in winter, with hay and straw only, who, I ask, would not call it dry fodder? A peck of turnips, beets, or carrots fed to each animal would be pleasant to them, and profitable to their owner. Horses should, by all means, have carrots. They eat them without cutting, grow fat and sleek. Turnips cut up fine and fed to sheep in spring when they get tired of hay, are of great benefit. Piggy, too, likes roots, though like some other folks he prefers to have them cooked. As a means of promoting the health of stock they are unsurpassed, and at the risk of incurring the displeasure of the M. D's, I assert they are far superior to pills or physic. A strong argument in favor of roots is the great quantity that may be grown upon an acre as compared with other crops. True, it is some work to get down on the hands to weed them when small, but then it tends highly to promote that almost extinct virtue, humility. Savages and barbarians live without cultivating the soil; let us resemble them in this respect no longer."

**CANARIES**—Rather more than three hundred years ago a ship was partly laden with little green birds captured in the Canary Islands, and having been wrecked near Elba, the birds made their escape, flew to the island, and there settled themselves. Numbers of them were caught by the inhabitants, and on account of their sprightly vivacity and the brilliancy of their voice they soon became great favourites, and rapidly spread over Europe. The original colour of the canary is not the bright yellow with which its feathers are generally tinted, but a kind of dappled olive-green, black, and yellow, either colour predominating according to circumstances. By careful management, however, the bird-fanciers are able to procure canaries of every tint between the three colours, and have instituted a set of rules by which the quality and arrangements of the colouring is reduced to a regular system. Still, the original dappled green is always apt to make its appearance; and even when two light-coloured birds are mated, a green young one is pretty sure to be found in the nest. For my own part, I care little for the artificial varieties produced by the fanciers; and to my mind, an intelligent bird and a good songster is not one whit less attractive because the colours of his plumage are not arranged precisely according to the fanciers' rules.—*Rouledge's Natural History*.

**DANGER OF CHECKING PERSPIRATION**.—A medical journal publishes a severe caution against allowing perspiration to be suddenly checked. All who are condemned to "eat their bread in the sweat of their brows," should give heed to this advice. As one illustration of the evils resulting from the practice which it condemns, the following case, divested of technicalities, may be cited: A Boston merchant having worked pretty hard on board one of his ships on a windy day, found himself exhausted and perspiring freely. He sat down to rest. The cool wind from the sea was delightful, and engaging in conversation, time passed faster than he was aware. In attempting to rise, he could not do so without assistance. He was taken home and put to bed, where he remained for two years, and for a long time could only hobble about on a crutch. Such exposures frequently result in inflammation of the lungs, pneumonia, ending in death in less than a week, or tedious rheumatic affections. Multitudes of lives would be saved every year, if parents would explain to their children the danger which attends cooling off too quickly after exercise, and the importance of not standing still after work or play, remaining exposed to a wind, or sitting at an open window or door, or pulling off any garment, even the hat or bonnet, while in a heat. It should be remembered that a cold never comes without a cause, and that in four times out of five, it is the result of leaving off exercise too suddenly, or remaining still in the wind, or entering while

heated a cooler atmosphere than that in which the exercise has been taken.

**ONLY A PENNY**.—The true secret of frugality is to lay up small savings. Most people never begin to save because they fancy they have not a sum worth saving. Begin with a penny: now, this very day, and every day contrive to save a penny. At the end of the year you will have £1 10s. 5d. This sum would buy some good tools, or a good piece of household furniture, or useful articles of dress, or a number of interesting books; and it would be a pleasure to you every time you looked at what you had bought out of your penny saving. If you choose not to spend it, but to put it into the savings' bank, in five years you would have between £8 and £9, which would be a very valuable sum that might help you in many ways.—*British Workman*.

**HOW THE SAVAGES OBTAIN WATER**.—Livingston, the African traveler, describes an ingenious method by which the Africans obtain water in the desert.

The women tie a bunch of grass to one end of a reed about two feet long, and insert it in a hole dug as deep as the arm will reach, they ram down the wet sand firmly around it. Applying the mouth to the free end of the reed, they form a vacuum in the grass beneath, in which the water collects, and in a short time rises to the mouth. It will be seen that this simple, but truly philosophical and effectual method might have been applied in many cases in different countries where water was greatly needed to the saving of life.

**THE MAGNITUDE OF BRITISH TRADE**.—If London held so high a place among the great exchanges of the world in the time of the second Henry, it now far outstrips all other competitors, though the whole of northern Europe has advanced. Hiram of Tyre spurned the gift of Solomon's cities in a consciousness of the grandeur of his own capital, that doubled itself in the blue waters of the Mediterranean; to have his own opinion on the magnitude of London and the extent of its trade would be a fine test of a shrewd and sober thinker for comparison. Carthage and Alexandria sink into the position of mere classic bazaars, if we attempt to estimate them statistically by the data of our own commerce; and Byzantium and Venice must trust to their art for a place in history, now that their commercial boundaries are so far overpassed by that of a city which sends its ships to every sea, and gives new life and hope to peoples rendered imbecile by centuries of superstition and cruelty. In 1860, the import and export trade of Great Britain amounted to no less than the sum of three thousand and seventy-five millions sterling, to the greater part of which the city and port of London, directly or indirectly acted as supercargo, ship's husband, banker, and customer at first hand.—*City Press*.



### Receipt for Rhubarb Wine.

Some time since we noticed a sample of Rhubarb Wine, sent us by Mr. C. D. Stevens, of La Salle Co., Ill. It was pronounced a very fine article by all who tasted it. Mr. S. gives in his method of making the wine as follows:

"I strip the leaves from the stalks, and crush the latter in a sugar mill, and press them in a press having a three-inch screw. For a 40 gallon barrel I put into a mixing tub 20 gallons of juice, 140 lbs of best brown sugar, and water enough to make 40 gallons. Mix well, and pour into the barrel, leaving the bung open, and keeping the barrel full until it is done working, and then bung tight for six weeks. Then dissolve 4 oz. of isinglass in warm wine, pour it into the barrel and bung tight, leaving it so for a year; then rack off and it is fit for use, but it will be much better at two years, and so on, the older the better. The sample I sent you is one year and eight months old.

I have plants enough this season to make 200 barrels or more. Am making it on shares as follows: any one furnishing sugar sufficient for two barrels, I make the wine and furnish the barrels, (keep it for them if they wish) and deliver them one barrel. If they furnish sugar and barrels for 12 bbl., I return them eight of wine. The wine I sent you, brought me \$2 per gallon. I could readily get \$3 for it now, if I had it to sell. June is the best time to make this wine."

WONDERS OF THE DEEP.—What a beautiful place would be the bed of the ocean, if we could only have an opportunity to contemplate its vastness without fear, and with an opportunity to descend in safety to its profound depths and investigate, with ease, all its mysteries! What a delightful chance, provided the personal safety of the explorer was secured, to spy out the pearly secrets, to gaze on the so-long-hidden gorgeousness of the silent caves and coral palaces, the forests and plains, the mountains and valleys of the submarine world. But the truth is that even if the sea were temporarily exhausted of its billows to accommodate our curiosity, it would be too dangerous in its thick, deep, unctuous bed, for human footsteps, and would be too fatal to life in its rank exhalations to leave us a hope of adding much to our stock of knowledge as to its marvels. The curled, deep-purpled leaves of the sea-lettuce, cover, no doubt, the bed of the ocean, and lie deeply intermixed with the large porous lichens; the many branched hollow algæ, full of life and motion in their rosy little bladders, thickly set with ever-moving arms. Seen from a height, the mass of luxuriant vegetation would present the appearance of a gay carpet brilliantly set off with shining ornaments, for among the leaves we might just catch a glimpse of the showily-painted molluscs;

the rainbow-tinted fish; the gigantic angang, the siren of the ancients; the shark, with his leaden eyes; the thick-haired sea-leopard, and the lazy turtle. And what a picture it would be!

UGLY INSECTS.—[To "G. G.," written on reading his contribution to *The Field*, of April 5, wherein he says "worms, beetles, ants, and other ugly insects."]

"The sage, and the beetle at his feet, have each a ministration to perform."—TUPPER.

Oh, term not insects "ugly!"

There never yet was one  
Of God's created creatures,  
Since earth from chaos sprung.  
But that possessed beauty,

Or proved a purpose wise;  
So think of him who made them,  
And ne'er their form despise.

Ants are endowed with instinct  
So wonderfully great,  
That men with reason gifted,  
Might them their models make,  
In various daily matters  
Pertaining to this earth;  
For industry and foresight  
Are traits of sterling worth.

There's beauty in the beetle—  
Look at his burnish'd wing;  
And usefulness—he clears the ground  
Of many a noisome thing.  
And so he aids to till the soil:

Thus we should ne'er condemn  
His form as "ugly," nor forget  
The good he does for men.

The earthworm is not lovely  
To look upon, I ween,  
But many a serious lesson  
We from a worm may glean.  
Did we but rightly ponder  
That sad yet true decree—  
"The worm, she is thy sister,"  
How humble we should be!

Then call not insects "ugly,"  
For God has made them all:  
The huge gigantic white ant,  
And ladybird so small.  
They all possess some virtue,  
Are objects of His love,  
Who says that not a sparrow falls  
Unknown to God above.

THE CAEN SOCIETY OF AGRICULTURE AND COMMERCE, founded in 1762, has just celebrated its hundredth anniversary—a fact which shows that there is more "solidarity" in the French rural character than many persons would be disposed to imagine. The society has especially devoted itself to the improvement of the pure Norman breed of stock, which it has contended

is capable of amelioration *per se*, like all choice races, and it has constantly discouraged the introduction of foreign blood, whatever might be its merit. The amelioration and conservation of the milking qualities of the breed have been particularly kept in view, and the society imposes on its "laureats," or principal prizemen, the condition of keeping prize bulls in the district for six months at least, and cows for a year, in order that the rewards given may not be turned to exportation account, and the stock rewarded lost to the locality.

**RULES FOR READING.**—Read much, but not many works. For what purpose, with what intent, do we read? We read not for the sake of reading, but we read to the end that we may think. Reading is valuable only as it may supply to us the materials which the mind itself elaborates. As it is not the largest quantity of any kind of food taken into the stomach that conduces to health, but such quantity of such a kind as can be best digested; as it is not the greatest complement of any kind of information that improves the mind, but such a quantity of such a kind as determines the intellect to most vigorous energy. The only profitable kind of reading is that in which we are compelled to think, and think intensely; whereas that reading which serves only to dissipate and divert our thoughts, is either positively hurtful, or useful only as an occasional relaxation from severe exertion. But the amount of vigorous thinking is usually in the inverse ratio of multifarious reading. Multifarious reading is agreeable; but as a habit it is, in its way, as destructive to the mental, as dram-drinking is to the bodily health. "Our age," says Herder, "is the reading age;" and he adds, "it would have been better, in my opinion, for the world and for science, if, instead of the multitude of books which now overlay us, we possessed but a few works good and sterling, and which few would, therefore, be more diligently and profoundly studied."—*Sir Wm Hamilton.*

---

### Editorial Notices, &c.

---

THE WESTMINSTER REVIEW, October, 1862.  
—BLACKWOOD'S MAGAZINE, October, 1862.

We have received, through Mr. Rowsell, of this city, from Leonard, Scott & Co., New York, the American Edition of the Standard British Periodicals.—The *Westminster* contains its usual quantity and variety of ably written articles. The one on Slave Power will be read with great interest on this side of the Atlantic, at the present critical time. Among the other articles that will attract

general attention may be mentioned: Essays and Reviews; Dr. Lushington's Judgment thereon; The British Sea Fisheries; Railways, their Cost and Profits; Gibraltar; The Encyclopædia Britannica; The Religious difficulties of India; with the usual elaborate article on Contemporary Literature.

*Blackwood* is as rich and racy as ever. The October number contains a continuation of those pleasant serials—*Caxtoniana*, and the *Chronicles of Carlingford*; Italy and France; with an exceedingly interesting paper to our reader generally, called *Ten days in Richmond*.—We most strongly recommend these well executed Reprints, belonging to the very highest standard of British Literature, to all that desire to keep pace with correct thought and opinion on the leading questions of the day, at the smallest possible expense. The four British Quarterlies and *Blackwood's Magazine* at \$10 a year, must be regarded as a miracle of cheapness.

THE ILLUSTRATED ANNUAL REGISTER of Rural Affairs for 1863. Albany, N. Y: Luther Tucker and Son.

The ninth annual issue fully sustains the high and useful character of the *Register of Rural Affairs*. It is "got up" in the neatly executed style which characterises the Messrs. Tucker's publications, and is ably edited by the well known agricultural and horticultural writer, J. J. Thomas. The present number consists of 130 pages, with 140 well executed engravings, embracing a great variety of subjects connected with the farm, garden and household, and all for the marvelously low price of 25 cents! The publishers offer most liberal terms for its introduction in quantities either to Agents, Agricultural Societies, Nurserymen, Dealers in Implements and Seeds, or any others who may take an interest in the dissemination of useful reading, and in the promotion of Rural Improvement.—We shall be happy to know that the *Rural Register*, and also the *Country Gentleman* (weekly), and the *Cultivator* (monthly), are having an increasing circulation throughout the British Provinces. They are publications of the highest reputation.



**Pure Bred Stock for Sale.**

**A**YRSHIRE BULLS, Calves, and Heifers; Improved Berkshire Pigs, and Leicester and Cotswold Rams.

R. L. DENISON,  
Dover Court, Lippincott P. O.

**FOR SALE!**

**Avrshire Cattle, Leicester Sheep, and Berkshire Pigs.**

**T**HE Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Specimens from his *Prize Herd* will be on Exhibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg. C. W.  
Aug. 30th, 1862. 6 mos.

THE  
**JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,**

Is Published on the first of every Month,

At \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**DUTCH FLOWER ROOTS.**

**T**HE SUBSCRIBERS BEG TO ANNOUNCE that they have just received their annual importation of Bulbs in good condition—consisting of *Double and Single Hyacinths*, \$1 00, \$2.00, and \$3 00 per dozen. A fine assortment of *Tulips*, from 50 cents to \$2.00 per dozen. *Crocus*, 12 to 20 cents per dozen, and at \$1.00 and \$1.50 per 100. *Polyanthus*, *Narcissus*, 12 to

15 cents each.

Descriptive Catalogues furnished gratis on application. They would also call attention to their fine stock of English Hyacinth Bottles, with supports, suitable for growing Hyacinths in winter, and for holding parlour bouquets in summer. (See above cut)

**JAMES FLEMING, & Co.,**

Seedsman and Florists, Corner of Yonge and Queen Streets, Toronto

25th, 1862.

## Agricultural and Veterinary Instruction.

A CLASS will be formed in Toronto for instruction in the Principles of Agriculture, and the Veterinary Art, specially adapted to the wants of young men engaged in, or intended for agricultural pursuits.—Professor Buckland will be assisted in the department of Scientific Agriculture by the Professors of Chemistry, Geology and Natural History in University College.—Mr. A. Smith, Licentiate of the Edinburgh Veterinary College, and consulting Surgeon to the Board of Agriculture for UPPER CANADA, will have charge of the Veterinary department.

The course will commence on *Wednesday, January 21st, 1863*, and continue for about six weeks. Three Lectures a day, and *no fees*.—The subjects treated of will comprise:—

The History, Breeding, Diseases, and Treatment of Farm Animals,—including their Anatomy and Physiology, with a course of instruction in Practical Dissecting.

Agriculture in its relations to Chemistry, Geology, Mechanics, Physical Geology and Meteorology, Botany and Zoology, including Farm Architecture and Engineering, the valuation and management of Landed Property, with special reference to Canada.

Pupils may enter and leave the Class without being subjected to an examination. But with a view of promoting Emulation the Board of Agriculture offer the following Prizes, the value to be given in suitable books:—First, \$20 to the Student who shall pass the best Examination in all the subjects at the end of the term Second, \$15; Third, \$10; and Fourth, \$5.

Further particulars may be known by applying either personally or by letter to Professor Buckland, University College.

Toronto, Nov., 1862.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.

## Contents of this Number.

|                                                                                    | PAGE. |
|------------------------------------------------------------------------------------|-------|
| Agricultural and Veterinary Instruction..                                          | 705   |
| Ice-Houses.....                                                                    | 706   |
| Destruction of the Wire-Worm.....                                                  | 708   |
| Transplanting Trees.....                                                           | 708   |
| Experiment with Diseased Potatoes.....                                             | 709   |
| On Construction of Piggeries.....                                                  | 709   |
| Training Colts for Special Objects.....                                            | 712   |
| HORTICULTURAL:                                                                     |       |
| Thinning of Fruits.....                                                            | 713   |
| The Ever-Blooming Rose.....                                                        | 714   |
| Grape Vines.....                                                                   | 715   |
| Mode and Time of Planting Grape Vines.....                                         | 715   |
| VETERINARY DEPARTMENT:                                                             |       |
| Small Pox in Sheep.....                                                            | 716   |
| TRANSACTIONS:                                                                      |       |
| Prize List, Provincial Exhibition.....                                             | 717   |
| do For Horses.....                                                                 | 717   |
| do do Cattle.....                                                                  | 719   |
| do do Sheep.....                                                                   | 722   |
| do do Pigs.....                                                                    | 724   |
| do do Poultry.....                                                                 | 725   |
| do do Agricultural Productions.....                                                | 726   |
| do do Horticultural Products.....                                                  | 728   |
| MISCELLANEOUS:                                                                     |       |
| Agriculture and Women. A Plea for roots. British Trade. Rhubarb Wine, &c., &c..... | 731   |
| EDITORIAL NOTICES:                                                                 | 734   |

## Horse Infirmary and Veterinary Establishment, Corner of Bay and Temperance Streets Toronto, C. W.

A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

And also begs to announce that Veterinary Medicines of every description are constantly kept on hand:—Such as, Physic, Diuretic, Cough Cordial, Tonic Condition, and Worm Balls and Powders. The constituents composing the Cough-balls, have been found (by Professor Dick, of Edinburgh) most serviceable in alleviating many of the symptoms of Broken-wind or Heaves in Horses. Colic Draughts, &c., a mixture which owners of Horses should always have beside them.

Liniments for Sore-throat, Sprain, Curb, Spavin, Ringbone.

Blistering Ointments. Liquid and sweating Blisters.

Horses bought and sold on commission.

Toronto, Aug. 30th, 1862.



THE  
Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, DECEMBER 16, 1862.

No. 24.

Close of the Year.

With this issue the volume of the *Agriculturist* for 1862 is completed; a year that has been pregnant with great events both in the old world and the new. In Europe thrones have been jeopardized, and commerce, especially the cotton manufacture, paralyzed; while on this continent the event which stands out in boldest relief in the whole course of its history,—the Civil War of the adjoining and hitherto happy and prosperous Republic,—has continued to be waged with increasing violence and desolation, with, we grieve to say, no immediate prospect of its being brought to a satisfactory termination. In Canada we have been blessed with peace, and, in most sections, with what may be considered on the whole an average, if not a bountiful harvest; circumstances that should call forth in every heart devout thankfulness to the Giver of all good. In the enjoyment of these inestimable blessings—peace and plenty—and possessing, under British Institutions, civil and religious liberty in its fullest application, it was becoming in us as a christian people to assemble together as was done the other day in the various places of worship throughout the land, in compliance with a proclamation of His Excellency, the honored Representative of our beloved Sovereign, to return thanks to Almighty God for the continuance of His mercies to us as a people, forming an integrant portion of the vast Empire of Britain. It is devoutly to be

wished that, being thus favoured by a gracious Providence, we may, as a people, rightly use the privileges and opportunities afforded us in continuing to improve our agriculture and all other industrial arts; living in unity and charity among ourselves, and cultivating a kindly and pacific spirit towards all our fellow creatures. With such thoughts and aspirations as these we are about closing our editorial labors for the year.

With respect to those labors it may at this time be permitted us to observe that no one can be more sensible of their imperfection and shortcomings than ourselves. With but little assistance from Societies and individuals in furnishing materials for our pages, it must be obvious to such as have an acquaintance with the management of agricultural periodicals, that *more time and practical information* are required of the conductors of a *fortnightly* publication, that it may have all the desirable characteristics, than we are able to command. To the pens that have rendered us aid by favoring us with contributions we hereby tender our hearty thanks, and trust that articles from their pens will enrich the pages of our next volume. Again we importune such as feel an interest in the objects of this journal, to send us occasional papers on subjects coming within the range of their practice, reading or observations; such contributions, however short or homely, will be always acceptable.

In consequence of the recent and great advance in the price of paper and the scarciness

of communications either from our agricultural societies or practical farmers, it has been deemed expedient to publish this journal henceforth *monthly*, commencing with the new year. The single number will be larger than one of our heretofore semi-monthly nos., and greater attention paid both in reference to the brevity and variety of the articles.—We shall introduce a larger number of illustrations in the next volume, the numbers will be published regularly on the first of the month, and there will be a marked improvement generally in its mechanical execution. The Veterinary Department will be enlarged and improved under the editorial supervision of Mr. Smith, Consulting Veterinary Surgeon to the Board of Agriculture, who has established himself in practice in this city, where he gives stated instruction in the Veterinary Art to all young men disposed to avail themselves of the opportunity, for about six weeks during the winter. (See Advertisement.)

Each number of our next year's volume will contain at least 40 pages, of the same size as at present, but we shall not be strictly confined to this number of pages. We shall occasionally, when circumstances render a greater space desirable, give 48, or perhaps 64 pages in a number, but as a general rule for the incoming year, each number of the journal will consist of 40 pages, and will be neatly stitched together and trimmed before being sent to the subscribers.

The price for single copies, will be the same as heretofore, half a dollar per annum; but to Agents, officers of Agricultural Societies, or Clubs, sending lists of subscribers, a considerable reduction will be made. The reduction will be in the shape of a discount, on the following progressive scale, viz:

To any person sending an order accompanied with the cash for 5 Copies and upwards, and under 20 copies, 10 per cent discount,—  
 20 copies and under 35 copies 15 per cent. dis.  
 35 “ “ 50 “ 20 “ “  
 50 “ and upwards, 25 per cent. discount will be allowed.

Or to state the same thing in other words, it will be seen that for any number of copies between 5 and 20, the price will be 45 cents. per copy.

Between 20 and 35 copies, 42½ cents per copy.  
 “ 35 and 50 “ 40 “ “

For 50 copies and upwards, 37½ cts. per copy.

Any person sending an order for a sufficient number of copies to entitle him to one of the smaller rates of discount, and afterwards increasing the order sufficiently to entitle him to a higher rate, will of course be allowed the higher rate on the whole order.

It is to be understood that the cash must always accompany the order, and the party sending the order will deduct from the amount the discount he is entitled to.

Our readers will please bear in mind that it is our invariable practice to discontinue sending our Journal to subscribers on the close of the term for which the subscription has been paid. The amount of subscription for each copy is so small, that to continue sending the paper after the close of the year, before the order has been renewed, would involve open accounts all over the country for trifling amounts, the collection of which would be exceedingly inconvenient, and would be attended by a large additional expense. We have therefore adopted the only system practicable in such a case, viz: to send out no papers till they are ordered and paid for in advance. Those of our readers therefore who wish the paper continued, and we hope that *all* will so, will please renew their subscriptions as soon as possible, either individually, or through their usual Agents. The paper will be mailed direct to the address of each subscriber on the list of any agent, or sent in bulk to the latter, as he may desire.

It is hoped that these terms will prove satisfactory to our subscribers. The *Agriculturist*, our readers will recollect, is post free. It will still be, as it has been heretofore, the cheapest publication of the kind on the continent, and we hope, with the aid of our subscribers and contributors, to make it the *best*, at least for Canada.

### Liebig's Lectures on the Application of Chemistry to Agriculture.

(Concluded from page 679.)

No one can for a moment doubt the great importance agriculture has acquired in Germany by the establishment for its instruction, founded by Thaer in the year 1807. But the agricultural colleges, founded ultimately on the same model, have done more harm than good to the science—they have the shell, but not the nut of



the school at Moeglin. We know that Thaer was not renowned as an agriculturist, but as a doctor; he was a man who had received a deep scientific education, and all his merit consisted in his being the first to apply the knowledge he had gained in science to practical agriculture. No agriculturist would confirm his agricultural calculations on the net cost and gain, or carry out the idea of net and gross produce, without a knowledge as deep as Thaer's of political economy. Without possessing the philosophical education of Thaer, it would be impossible to draw out certain rules for guidance by the help of agricultural facts as innumerable as incomprehensible. It would be still more difficult to apply the natural sciences to agriculture without a knowledge of natural history. The lessons of Thaer were so useful, not merely because he was a practical, but more because he was a scientific man.

In the time of Thaer a young man could acquire no knowledge of physics, chemistry, botany, geognosy, or mathematics, without a university course. Thaer, who saw the great service all these sciences would be to agriculture, was obliged to introduce a part of each theory into the plan of studies he traced for Moeglin. These are the accessory circumstances which caused the annexation of a rural estate, serving as a means of instruction in practical agriculture, and a school where all the accessory sciences could be taught under the able direction of Thaer, who knew so well how to preserve a proper relation between theory and practice. This double direction given to the studies was useful, but it became the source of great evil to agriculture itself, because it was kept up in all the agricultural colleges subsequently founded: the result being, that the direction of these establishments was given to men possessing a knowledge of the practices necessary for the conductor of rural improvements.

Unfortunately, as it was impossible to find men possessing practical knowledge of all parts of agriculture, the choice was confined to those who were capable of managing the culture of wheat or artificial meadows. But the society exposed itself by committing serious errors in measuring the ability of a man by the superiority which he manifested in one special thing; because his exceptional abilities depended upon the care, order, and activity which he displayed, on the fitness or composition of the soil—in fact, a thousand things which cannot be taught in a school.

It is true, the culture of wheat and fodder is the principal aim of agriculture, because bread and meat stand before all other produce—such as beetroot, oats, flax, tobacco, and the vine; as the development of commerce does not permit them to be considered of any significant value. For the same reason, one has a right to say that the making of sulphuric acid includes all manufactures not mechanical. However,

the culture of wheat does not constitute the whole of agriculture any more than the fabrication of sulphuric acid constitutes the whole of chemical arts. It would be as absurd to appoint as director of a school of practical chemistry and chemical arts a manufacturer of sulphuric acid because he had distinguished himself in his trade, as it would be to place at the head of an agricultural academy men whose whole talents consist in being able to raise wheat and clover.

As we have to confide these institutions to men devoid of all the qualities which have rendered the influence exercised by Thaer at once so powerful and beneficent—as we have to choose them amongst men who possess other talents of which, in one point of view, Thaer was inferior to many practitioners, these schools have lost their scientific character; and their influence and their position have shown in an incontestable manner that practice alone—that is to say, without the aid of science—is quite incapable of making progress. Hence, we can comprehend the remarkable phenomenon of academies, often richly endowed by the State, not assisting during half a century in the development of agriculture. We certainly cannot accuse them of having left the theory and practice precisely at the same point to which Thaer brought it; but it is certain they did not comprehend the aim that great man had in view, and that it is impossible for them to learn it.

These academies lost much of the faculty of ascertaining and comprehending the importance of a scientific result, when the pressure of the want was felt for experimental institutions (*versuch stationen*) taken from the heart of agricultural societies, and even recruited from the circle of practical agriculture for the purpose of experimenting on the practical results of science, and thus enabling them to connect theory with practice. The existence of these experimental stations showed how little the agricultural academies were in a state to put the forces and means at their disposal to the service of progress, which is the most important of all causes. In fact, if from the commencement the schools had kept up their character, no one would have thought of building other institutions, half scientific and half practical. It is not, then, to be wondered at that opposition against the new scientific doctrines manifested itself in these schools, where the directors should at least have shown themselves friendly to them. But it is impossible for them to shine in their schools, nor even to keep pace with the scientific discoveries of the age, whilst they have a career open before them for giving proofs of their ability, of their agricultural knowledge, and acquiring for themselves reputation and honour in the estimation of their superior officers, by augmenting each year the produce of the establishment entrusted to their management.

A director, animated by a true scientific spirit,

would consider, under all circumstances, the interests of the school as being the most essential thing, and the revenue of the land as an element very accessory, and that ought to be found in every establishment for education.

From this false position proceeds again, the distance of agricultural academies from establishments for general instruction, which have almost entirely excluded from them instructions in natural history; and that has hindered them from participating in the extraordinary advancement made in the science of nature since the time of Thaer. One can scarcely picture to himself the difference which exists between the manner in which the most simple things were taught in those schools and the present state of scientific knowledge. We ought not, then, to be shocked to see the simplicity with which certain leaders of agriculture exhausted themselves, to show that the culture of the fields is not subject to the laws of nature, and that practice is a thing altogether separate—entirely different from head-knowledge, or that which is called "theory."

The men who entitle themselves "practitioner" have put forward, with immoderate enthusiasm, practice to the diminution of science. As long as the conquests of science extended over a limited circle, they passed unperceived; but as soon as its importance increased, it was incapable of appropriating them to itself. Then the right-thinking amongst the practical men acknowledged that the old way was insufficient, and that it had become necessary to open a new one for the advancement of progress.

At this time all the agricultural colleges have completely lost their importance, and if they are supported they will become the asylums of a number of professors who have forced themselves into a position which they are quite incapable of filling honestly; which is interdicted to them by the absence of the necessary faculties, and by failing of the acquirements they profess to teach. Indeed, a great number of men, who are incapable of finding the theoretical solution of the most simple problem put into practice, promise to us agriculturists to solve the most complicated questions of vegetable physiology and culture, by means of a recipe for the composition of a manure. Agriculture is a new country that science has to conquer, and which, when it comes to discover a new land, begins by falling into the hands of adventurers and swindlers. It is only recently that the true cultivators have arisen, who, by the sweat of their brow, have succeeded in the development of the natural riches of the country, and in drawing from it a portion of its resources. The period at which this transformation in agriculture will take place, is no longer at a remote distance, for we begin to comprehend that the agriculture of our times must renounce its prejudices, in virtue of which we thought it possible to succeed in husbandry with a less amount

of science than in all the other professions. The agriculturist sees that he must renounce the vague *perhaps*; that is to say, he cannot proceed in rational practice without possessing true knowledge and acquirements; that he need not fear compromising the results of his efforts and meditations by appropriating to himself what wise and experimental men have found by reflection, which they have left for the good of humanity; in fact that he ought not to be treated, in the lessons which are given him, as a child whom one makes to sit at a small table, and for whom one cuts small pieces for fear he should be choked by swallowing large pieces too quickly.

The golden age of equality in ignorance is past for agriculture; and we already see making its appearance amongst them a species of hierarchism, according to the state of their minds and the amount of knowledge they have acquired. Science is the force that conquers capital, and, consequently, power; it chases then, naturally and infallibly, the son from the heritage of his father.

The agriculturist or manufacturer who uses his eyes must certainly see that he lives in a cruel age, regardless of persons, which renders more and more difficult the subsistence of a man ignorant, incapable, or weak, and that in the generation following it will be altogether impossible. He must understand that he ought always to learn more; that in no period can he live quietly, or avoid taking part in the determined struggle of competition, and that all protection that hinders him from employing his forces and development only hastens his ruin.

The agriculturists' education would not have been directed for a long time in a different manner from that of other professions, if, instead of interfering in their affairs by the protection of schools of agriculture, the students had been left to seek their own means of instruction. It was, therefore, tacitly acknowledged that the agricultural student was uncultivated, ignorant, without education; that he needed particular means of instruction; and that academies of agriculture were calculated to hinder him from rising to a superior position. In our schools of commerce and manufacture (which did not exist in the time of Thaer) the agricultural student may acquire a much deeper knowledge of mathematics and natural history than by following the course of the academies of agronomy; as it teaches no political economy, nor chemistry, natural philosophy, nor even the science of botany, which is particularly useful to the agriculturist. The union of establishments, specially for their instruction, to the universities, is the most powerful means of supplying the wants of the agriculturists. Roscher considered that reunion as being much more important than an affiliation to a model establishment. If we enquire into the real state of these agricultural academies, we find they possessed a most miser-



able stock of implements, indeed of all machines and instruments for agriculture. The tools used for the purpose of teaching practical knowledge resembled those which come from England, or those which are in use in our great rural establishments, as the schools of brewing, distilling, vinegar, sugar, and starch making, which we find attached to these same academies, similar to the breweries, distilleries, and vinegar factories of our large towns, or rather to the manufacturing of sugar and starch in the country. The machines and apparatus are old—like child's toys; in fact all that the scholar can learn through their medium is what he cannot avoid learning when he enters on practical life. Even the best moral institutions that the State supports possess faults, which increase from year to year; because the stimulus of competition, so powerful to excite industrial progress, is altogether excluded from a public establishment.

The agricultural academies have outlived themselves, like the pharmaceutical colleges which flourished till about twenty-five years ago, and then were no more heard of. The apothecary needs as much scientific and practical knowledge as the agriculturist, but he no longer now, as formerly, goes into a special institute; he apprentices himself to an accomplished apothecary for some years, and then finishes his education at the university. That is the path that Thaer proposed to indicate to the agriculturists—the object that they would attain much better, and more surely without special academies. If the State would expend usefully the money that it throws away in keeping up these academies and model institutions, which are in reality but child's play, it would give the means, now unattainable, of instruction. By procuring models of implements and machines, and forming permanent exhibitions in our large towns, it would do more for the advancement of practice, than the establishing of the most perfect model school.

In every age, as now, our academical operations have been directed towards science. The only problem that a session of learned men can solve is the increase of human knowledge. The only use that the people in mass, or citizens in particular, draw from these discoveries depends exclusively on the people or individuals; in fact, those alone can participate in the triumphs of a scientific spirit who have succeeded in mastering it.

Consequently, the effect of the operations of an academy of science depends essentially upon the intellectual elements that the nation possesses—the facility with which it approximates to itself the knowledge presented to it, and causes it to fructify. It is the essential nature of any intellectual work whatever to increase the amount of knowledge gathered in the domain of any particular science, and to exercise an influence in a circle more or less extensive. In many cases this effect is produced immediately; in

others, on the contrary, it manifests itself only after a long course of years of changes, material or intellectual, in the situation of the human species. We know no means of measuring in advance the influence of a scientific work, and its value to the life of populations. Every great result has had a small beginning; every important discovery may be compared to the roots of the oak, which are so fine that they can scarcely be seen, but which must sustain a trunk, branches, and leaves before bearing flowers, and, still further, fruit. Millions of men taste the flavor of fruit without knowing what myriads of rootlets and leaves must work to extract from the soil the juices which fill them; many are even ignorant that without the aid of these innumerable agents the sterile tree would bear no fruit. Thus, like the different links of a chain, millions of discoveries precede the great results which are the fruits of the tree of science, and to which is attached the name of a discoverer whom the vulgar proclaim inventor. The smallest discovery, almost invisible when it bursts from the mind of the thinker, reaches maturity by the evolution of time, and thus arrives at the full development of the germs it contains. The most enthusiastic man would not have dared to predict, fifteen years ago, the influence that the ideas and researches of Sommering were destined to have over the incomes of men, nations, and ports of the world. Who would have been able to say that the discovery of new chemical preparations, possessed of the property of taking fire by collision, inaugurated a new epoch in the art of war? Could we divine that the works of Fraunhofer would exercise a useful influence over astronomy, and that thirty years would pass away before the salt of Glauber was applied to the fabrication of glass by the advice of Gehlen, and that the liquid glass invented by Fuchs would give birth to a new process of painting, and come into general use in the stereoscope? Each scientific result is an expression of the life of the soul; and it is in its nature to live for great things, just as the root gives birth to a complete organism.

### On the Commercial Value of Artificial Manures.

*Continued.*

My attention has been directed to a remarkable change which has of late years come over the minds of some manufacturers with regard to analyses and money valuations; many of those who were once much opposed to such proceedings are now most anxious to have recourse to them for certain manures. The reason for this anxiety is obvious; for if scientific men whose names are well known to the public at large, gravely state that manures which are actually sold at £7 10s., according to the usual mode of computing their value, are worth £11 10s., it is

but natural that manufacturers should desire to secure so favorable, though unreasonable, a testimony. For years I have refrained from putting a money value upon manures sent to me for manufacturers; for it strikes me very forcibly that if a maker has not sufficient chemical and commercial knowledge to determine correctly the money value of his own productions, he has mistaken his proper calling.

Although the trade in manures is getting more and more into the hands of a limited number of intelligent and large manufacturers, there are still to be found, here and there, small and ignorant makers, and farmers who make a few hundred tons of artificial manures for their own use and that their neighbours. Generally speaking, a manufacture carried out on such a limited scale brings no advantage to the consumer, and seldom benefits, for any length of time, the producer, who has neither skill, capital, or enterprise to compete with a firm which does a large trade. The price which a manufacturer has paid for his raw material, including labour, carriage, bags, &c., is not necessarily a criterion of the worth of the manure, because he may have bought under serious disadvantages. A man who has not sufficient chemical knowledge will often select raw materials which are very good in appearance, but, in reality, cannot be employed so profitably as others; or he may not have sufficient capital to buy in materials which can only be obtained by taking a ship's cargo at a time; or, if he has capital, he may not have sufficient commercial knowledge and decision to take advantage of a favourable turn in the market. For these and similar reasons such a dealer will lose money if he sells the manufactured products at a rate which will yield a good profit to another vendor more favourably circumstanced.

In commercial analysis and calculations founded upon them, the form and conditions of the several constituents are too often overlooked. This is especially the case with respect to the state of combination and mechanical condition in which the insoluble phosphates and nitrogens occur.

Insoluble phosphate of lime may be present in any of the following forms—One half, or one fourth inch bones, fine bone-dust, boiled bones, bone-black, bone-ash, coprolites, apatite, Estramadura phosphate, Sombrero guano, and phosphatic guanos.

Now, in most of these conditions insoluble phosphate of lime has a different commercial and agricultural value. One fourth-inch bones are more effective and cost more than one-half inch; fine dust is still more expensive; and, generally speaking, the fine bone-dust is the most powerful in its action and the greater the cost of preparation. When bones are acted upon by acid, but not applied in sufficient quantity to convert all the phosphate of lime which they contain in-

to soluble phosphate, there remains in the mixture a certain quantity of insoluble phosphate, which, in this condition, is still more valuable than in that of fine bone-dust. On the other hand, the insoluble phosphates in animal charcoal (bone black) and even bone ash are of very little use in a turnip manure. Of still less use to root crops, if possible, are the insoluble phosphates in coprolites, apatite, and other mineral phosphates. Intermediate in their action between fossil phosphatic materials and bones are, perhaps, certain semi-fossil guanos; whilst in Peruvian and several phosphatic guanos the insoluble phosphates are so extremely minutely divided that I am inclined to consider them worth twice as much as phosphates in the form of ordinary bone dust.

It is, therefore, simply absurd to put the same value on insoluble phosphates, irrespective of the form in which they occur, since in a turnip manure their worth may range from absolutely nothing up to £7, £8, or even £12 a ton.

As regards nitrogen, this element may be present in the shape of ammoniacal salt, or of nitrate of soda, or uric acid; or, again, in shoddy, whale blubber, fish refuse, horn and hide clippings, scutch, leather refuse, and many other forms. In all these different forms nitrogen has a different agricultural and commercial value, and it is therefore unreasonable to assume the same price in calculating the money value of the nitrogen which a manure may contain in so many varied shapes.

Besides this, some purely practical matters have to be well considered before a fair estimate can be given. In some instances superior composition in regard to ingredients may be more than neutralised by imperfect pulverisation or by a damp and lumpy condition, tending to inequality of distribution and irregularity in the growth of the crop. A fine state of division, dry condition, and uniformity of composition cannot be secured without a considerable increase in the cost of manufacture. No allowance, however, is generally made for this expenditure of money by our rule-of-three chemists; or, if anything at all is allowed, the same manufacturing expenses are assumed whether the manure be fine, dry, and uniform, or the reverse. It is just thereby done to honest and skilful manufacturers, and at their expense the sale of apparently cheap, but really inferior manures is encouraged. Is the manure dry enough to admit of equal distribution on the land?—is it very fine, or coarse and lumpy?—is it uniform in composition?—are the ingredients and their relative proportions in a manure really useful for the purpose for which the latter is recommended?—what facilities are there in a particular locality for procuring the required fertilisers?—and many similar questions that do not enter for a moment into the mind of a mere "calculating machine," requires to be well weighed before



anything like a just estimate of the money value of a manure can be given.

In a highly concentrated, well prepared super-phosphate, I have already noticed that soluble phosphate has a somewhat higher commercial value than in an ordinary sample. Concentration or dilution of all the more fertilising constituents similarly affects the commercial value of other manures. It is, therefore, evidently unfair to take as a standard the price at which ammonia, phosphate &c., can be purchased in Peruvian guano, in calculating the money value of night-soil, sewage, and other bulky fertilisers.

A very striking example, showing how much bulky and, comparatively speaking, valueless materials reduce the money value, is presented to us in farm-yard manure. One ton of fresh yard manure of fair average quality, I find, contains :

|                                                                  | s. | d.  |
|------------------------------------------------------------------|----|-----|
| 6½ lb. of soluble phosphate of lime, worth, at 3d. per lb., ..   | 1  | 7½  |
| 8½ lb. of insoluble phosphate of lime, worth, at 1d. per lb., .. | 0  | 8½  |
| 15½ lb. of potash, worth, at 3d. per lb., ..                     | 3  | 1½  |
| 15 lb. of ammonia, worth, at 6d. per lb., ..                     | 7  | 6   |
| Total, .. .. .                                                   | 12 | 11½ |

Whilst thus the calculated value of farm-yard manure is nearly 13s. per ton, its real commercial value is about 5s. per ton.

Again, before certain measures could be obtained that are now specially prepared to suit particular soils, or particular crops, enterprising and intelligent manufacturers have frequently incurred heavy expenses in trying all kinds of fertilising mixtures before they succeeded in ascertaining the states of combination and the relative proportions in which these should be combined in order to produce the best practical results. It is, therefore, but fair that those who profit by these researches should repay the manufacturer for the time, skill, and expense which he has bestowed upon the production of such special manures. In estimating the money value of such fertilisers this ought to be taken into consideration, and allowance be made for more than mere market price of the several uncombined ingredients.

Perhaps it may be suggested that all these observations only tend to show the inability of the chemist to give a reliable estimate of the money value of a manure. I openly confess concurrence in this sentiment if the name of "chemist" is applied to a mere human analysing and calculating machine, or even to a purely theoretical man of science; but strongly repudiate it if it indiscriminately refers to every chemist.

The errors committed by purely theoretical men, from the carelessness and ignorance of others who call themselves agricultural chemists, show incapacity in individuals; but they do not prove that men who, without presumption, may lay claim to the office of an agricultural chemist, are

not in a position to render most useful services to the farmer by informing him whether manures sent for examination are cheap, dear, or moderate, at the prices at which they are offered for sale. Unquestionably, a considerable amount of commercial and agricultural knowledge, as well as judgement and the fixed determination neither to favour producer or consumer, are quite as essential qualifications in an agricultural chemist as analytical skill; but those agricultural chemists who possess the somewhat rare gift of uniting sound and scientific knowledge with good sense and acquaintance with practical matters assuredly are, or ought to be, in the very best position properly to estimate the agricultural and money value of manures.—*Journal of Royal Agricultural Society of England.*

## Horticultural.

### Flower Garden and Pleasure Grounds.

A friend remarked to us after the issue of our last number, that it was very discouraging to be told that ten per cent. on the original cost should be the estimated cost of maintaining a place after its completion. He thought if that were generally known, it would prevent many from entering on country life. "My place," said he, "cost me about \$20,000, and I should be sorry to believe that I had to spend \$2,000 annually to maintain it in decent order." As our friend's place embraces but five acres, we were surprised at the cost, but found he included *his house* in the sum named. Allusion is again made to the subject as other parties may have misunderstood our remarks. We referred simply to the *garden and its embellishments*. Those few places in the Union that have had \$20,000 spent on pure gardening, will not find \$2,000 too high an estimate for their annual maintenance, and never ought to find in that fact any discouragement.

From remarks made by other friends, we learn that the observations offered on this subject have attracted considerable attention. We are pleased that they have done so. Gardening suffers no greater injury from any source than from parties who go ignorantly into its pursuit; and we can do both it and the citizen proposing to go into the country, no greater favor than to show plainly what gardening costs, as well as indicate the various ways in which pleasure may be derived from it.

Planting of spring bulbs, tulips, hyacinths, crocus, snowdrops, fritillarias, lilies, etc., and the transplanting of shrubs and division of herbaceous plants, will occupy chief attention in October. All herbaceous plants are much better for being protected through winter by a covering of dry leaves, on which a little soil is thrown to keep the leaves from blowing away. Half-

hardy roses and vines may be protected in the same way. When they are very long and slender they are taken down from their trellises, and coiled into circles as small as may be without risk of breaking them, and then the soil put on. Those things that grow late, such as many kinds of Noisette roses, should have their immature top shoots shortened a few weeks before the protecting process is commenced. The wound will then heal over, and not cause the decay of the upper portion of the shoots, as is very often the case when they are either cut at laying down, or not shortened at all.

Of course, those roots that suffer by frost should be taken up before danger. Gladiolas, Madeira vines, dahlias, tuberoses, etc., for instance.

Towards the end of the month almost all kinds of tree seeds may be sown, except pine, unless there is any danger from mice or other vermin. It is, on the whole, best as soon as the seeds are at hand, to place them in boxes with more than an equal bulk of sand, and set them out to the weather to freeze. They must be sown out in the spring as early as the ground will work.—Some seeds will not germinate till the second year. If they do not appear early in the season, they should not be disturbed. Many seeds that usually come up the season after sowing, will not do so if the shells are allowed to dry and harden first. Cherries, peaches and most fruits, will often lie so, and halesias roses and thorns, occasionally stay three years. Seed-beds should be selected in a deep, warm and rich soil; and one tolerably free from the seed of weeds, on any other it will not pay to raise seedlings. In States where the frosts are severe, seedlings of all kinds that have not attained a greater height than six inches, should be taken up, "laid in" in a sheltered place thickly, and covered with anything that will keep frozen during the winter. If left out they are liable to be drawn out and destroyed. Young seedling stock received from a distance, should be also so treated. In the more Southern States they may be set out at once, and as much planting as possible be accomplished that will save spring work. Many cuttings will not do well unless taken off at this season and laid in the ground under protection, like seedlings, the quince, syringas, or lilacs, *spirea prunifolia*, and some others. In the "mild winter States," evergreen cuttings should be made now, and set out thickly in rows. The leaves need not be taken off, but short, thickest branches laid in under the soil. When rooted next fall they may be taken up and divided into separate plants. In more Northern States, evergreens may not be so struck at this season, unless protected by green-houses and frames.—Where these are at hand, evergreens may be put in, in boxes or pans all through the winter.

—*Gardener's Monthly*.

## Transactions.

### Prize List, Provincial Exhibition.

(Concluded from last number.)

#### CLASS XXXIII.—PLANTS AND FLOWERS.— (147 Entries.)

*Judges*.—Geo. Sheppard, Montreal; Geo. Laing, Hamilton; John Gray, Toronto; Wm. Grey, Woodstock.

Best dozen Dahlias, named, Geo. Leslie, Toronto, \$2; 2d do do, John Brown, Toronto, \$1 50; 3d do do, Judge Harrison, Toronto, \$1.

Best and largest collection of dahlias, Geo. Leslie, Toronto, \$5.

Best bouquet of cut flowers (for table), Geo. Vair, Yorkville, \$2; 2d do, Judge Harrison, Toronto, \$1 50; 3d do, W. A. F. Currie, Niagara, \$1.

Best hand bouquet, Jas. Fleming, Toronto, \$2; 2d do, J. M. Hirschfelder, Toronto, \$1 50; 3d do, Geo. Vair, Yorkville, \$1.

Best collection of green-house plants, not less than 12 specimens in flower, Judge Harrison, Toronto, \$10; 2d do, H. Eccles, Toronto, \$6; 3d do, Sam Ashby, Toronto, \$4.

Best 12 pansies, Jas. Best, Ashport, \$2; 2d do, H. Eccles, Toronto, \$1 50; 3d do, Chas. Arnold, Paris, \$1.

Best 6 fuchsias, in flower, Christopher Young, Yorkville, \$4; 2d do, H. Eccles, Toronto, \$3; 3d do, Sam Ashby, Toronto, \$2.

Best collection of annuals in bloom, Jas. Forsyth, Toronto, \$2; 2d do, R. Guthrie, Toronto, \$1 50; 3d do, Joshua Norrish, Eden Mills, \$1.

Best 6 cockscombs, W. A. F. Currie, Niagara, \$2; 2d do, Geo. Vair, Yorkville, \$1 50; 3d do, Edward Lewis, Yorkville, \$1.

Best 6 balsams in bloom, S. Ashby, Toronto, \$2; 2d do, do, do, \$1 50.

Best collection of asters, Jas. Fleming, Toronto, \$2; 2d do, Mrs. M. Choate, Port Hope, \$1 50; 3d do, R. C. Gill, Colborne, \$1.

Best collection of 10 weeks' stock, Hon. W. Cayley, Toronto, \$2; 2d do, R. C. Gill, Colborne, \$1 50; 3d do, Chris. Young, Yorkville, \$1.

Best collection of hybrid perpetual roses, not less than 12 blooms, Judge Harrison, Toronto, \$3; 2d do, H. Girouard, Hamilton, \$2.



Best floral ornament or design, J. M. Hirschfelder, Toronto, \$5; 2d do, J. M. Hirschfelder, Toronto, \$4; 3d do, W. T. Goldsmith, Toronto, \$3.

Best collection of verbenas, not less than 12 varieties, John Brown, Toronto, \$3; 2d do, Jas. Forsyth, Toronto, \$2; 3d do, Geo. Vair, Yorkville, \$1.

Best 6 petunias, Rev. E. Baldwin, Toronto, \$2; 2d do, Geo. Leslie, Toronto, \$1 50; 3d do, J. M. Hirschfelder, \$1.

Best collection perennial phloxes, George Leslie, Toronto, \$2.

Best 6 hardy shrubs, spikes in flower, Jas. Forsyth, Toronto, \$2; 2d do, Geo. Leslie, Toronto, \$1 50; 3d do, H. Girouard, Hamilton, \$1.

Best collection of hollyhocks, J. C. Small, Toronto, \$2; 2d do, Chris. Young, Yorkville, \$1.

Best display of plants in flower, distinct from other entries, Chris. Young, Yorkville, \$10; 2d do, J. M. Hirschfelder, Toronto, \$6.

Best collection of native plants, dried and named, Wm. Saunders, London, \$5; 2d do, Mrs. C. P. Traill, Peterborough, \$3.

Best specimen of useful and ornamental rustic work for the garden, H. Girouard, Hamilton, \$4.

EXTRA PRIZES.—J. M. Hirschfelder, Toronto, collection of Petunias and foliage plants, \$1 50. Richard Guthrie, Toronto, collection of perennial and biennial flowers, \$1 50. Geo. Leslie, Toronto, collection of herbaceous flowers, \$1 50. Mrs. M. A. Choate, Port Hope, wreath and bouquet of everlasting flowers, \$1 50. John Gray, Toronto, perennial phloxes, \$1. John Gray, Toronto, collection of seedling perennial phloxes, 15 varieties, \$2. Ezekiel Snider, Brockville, bouquet of everlasting flowers, \$1. Samuel Ashby, Toronto, orange tree, \$1 50. Bruce & Murray, Hamilton, collection of gladioli, \$1 50. James Fleming, Toronto, collection of zinnias, \$1 50.

#### CLASS XXXIV.—DAIRY PRODUCTS AND PROVISIONS.—(128 Entries.)

*Judges.*—M. Thwaite, Whitby; Trueman McEvers, Cobourg; Samuel Lake, Newburgh; Wm. Smith, Frankville; E. C. Fisher, Etobicoke.

Best firkin of butter, in shipping order, not less than 56 lbs., P. R. Palmer, Thurlow, Hastings, \$12; 2d do, Ann Youart,

Nassagaweya, \$10; 3d do, Samuel Wood, Islington \$8; 4th do, Arch. Glendinning, Ellesmere, \$6.

Best butter, not less than 28 lbs, in firkins, crocks or tubs, James Patton, Markham, \$8; 2d do, Mary Thomson, York Tp., \$6; 3d do, Henry Jennings, Victoria Sq., \$4; 4th, do, Ann Youart, Nassagaweya, \$2.

Best cheese, not less than 30 lbs, W. R. Dorn, Napanee \$10; 2d do, Hugh McMillan, Erin, \$8; 3d do, James Patton, Markham, \$6; 4th do, P. R. Palmer, Thurlow, \$4.

Best two stilton cheeses, not less than 14 lbs. each, Hiram Ranney, Dereham, \$10; 2d do, do, do, \$8; 3d do, H. K. Parsons, Guelph, \$6; 4th do, Hiram Ranney, Dereham, \$4.

Best honey, in the comb, not less than 10 lbs, Thos. Greenhaugh, Brampton, \$3; 2d do, James Lesslie, York Tp., \$2; 3d do, Hugh McKee, Norwichville, \$1 50; 4th do, Robert Anderson, York Tp., Transactions.

Best jar of clear honey, Hugh McKee, Norwichville, \$4; 2d do, John Muir, Scarborough, \$2; 3d do, Robert Anderson, York Tp., \$1 50; 4th do, Wm. Jackes, Eglinton, Trans.

Best side of cured bacon, F. W. Fearman, Hamilton, \$3.

Best ham, cured, F. W. Fearman, Hamilton, \$3; 2d do, do, F. W. Fearman, Hamilton, \$2; 3d do, Jonas S. Barnes, St. Thomas, \$1.

EXTRA PRIZES.—Pine-apple cheese, Hiram Ranney, Dereham, \$2. Cured meats, Benj. S. Morris, Toronto, \$1. Tin of lard, Benj. S. Morris Toronto, \$1. Jar of prepared honey, John McKee, Norwichville, \$1. Two pieces of breakfast ham, F. W. Fearman, Hamilton, \$1. Two pieces of breakfast bacon, F. W. Fearman, Hamilton, \$1.

NOTE BY JUDGES.—Practical information of the mode of making pine-apple cheese should be required and published in the *Journal of the Board of Agriculture*.

#### AGRICULTURAL IMPLEMENTS.

##### CLASS XXXV.—IMPLEMENTS WORKED BY HORSE OR OTHER POWER.—(186 Entries.)

*Judges.*—J. Bingham, Norwich; John Tennant, Paris; John N. Diamond, Belleville; Wm. Woods; E. C. Fisher, Etobicoke.

Best iron plough, Wm. Mahaffy, Brampton, (draught on trial 466 lbs.) diploma and \$12; 2d do, Edward Wilmott, Kingston,

draught on trial 520 lbs.) \$8; 3d do, Hugh Masson, Ottawa, (draught on trial 558 lbs.) \$4.

Best wooden plough, Wm. Mahaffy, Brampton, (draught on trial, 441 lbs.) diploma and \$12; 2d do, Isaac Modeland, Brampton, (draught on trial 493 lbs.) \$8; 3d do, Hugh McLaren, Lowville, (draught on trial 489 lbs.) \$4.

Best subsoil plough, Peter Mallaby, Weston, diploma and \$12; 2d do, Atkinson Bros., Thistleton, \$8.

Best double shear trench plough, Richard Hill, Port Hope, \$10; 2d do, H. A. Massey, Newcastle, \$6.

Best double mould plough, Wm. Jeffrey Thornhill, \$10; 2d do, Peter Mallaby, Weston, \$6.

Best pair of harrows, Pet Mallaby, Weston, \$6; 2d do, Wm. Mahaffy, Brampton, \$4; 3d do, Geo. Prentice, Columbus, \$2.

Best horse power thresher and separator, John Abel, Woodbridge, diploma and \$20; 2d do, Joseph Hall, Oshawa, \$12; 3d do, Haggart Bros., Brampton, \$8.

Best grain drill, Maxwell and Whitelaw, Paris, diploma and \$12; 2d do, Jas Atkinson, Woodbridge \$8; 3d do, Robt. Fidell, Queensville, \$4.

Best straw cutter, Maxwell and Whitelaw, Paris, \$5; 2d do, Geo. C McKenzie, Georgetown, \$4; 2d do, Hugh McLaren, Lowville, \$3.

Best smut machine, Jno. Gartshore, Dundas, \$6.

Best portable grist mill, H. A. Massey, Newcastle, \$12.

Best grain cracker, Ganson Waterous & Co., Brampton, \$8; 2d do, Jacob Lawrence, Palermo, \$6; 3d do, Alanson Harris, Beamsville, \$4.

Best corn and cob crusher, Ganson Waterous & Co., Brantford, \$4.

Best cider mill and press, Alanson Harris, Beamsville; \$12; 2d do, N. M. Samson, St. Catharines, \$8.

Best two horse waggon, I W. Weber, Conestoga, \$12; 2d do, Jno. Marshall, Brampton, \$8; 3d do, James Berry, Wellington Square, \$4.

Best one horse light market waggon, Sam. Lake, Newburgh, \$10; 2d do, Henry Pearin, Stanley Mills, \$7; 3d do, Shuttleworth & Mallaby, Weston, \$3.

Best horse rake, Alanson Harris, Beamsville, \$4.

Best metal roller, Atkinson Bros., Thistleton, \$11; 2d do, H. A. Massey, Newcastle, \$8.

Best wooden roller, Salem Eckhardt, Unionville, \$10; 2d do, Andrew C. Bruce, Glenmorris, \$5.

Best stump extractor, Hugh McLaren, Lowville, \$8.

Best reaping machine, Isaac Modeland, Brampton, diploma and \$20; 2d do, Collins & Osborne, Guelph, \$12.

Best Mowing machine, R. & R. S. Patterson, Belleville, diploma and \$20; 2d do, W. H. Walbridge, Belleville, \$12; 3d do, do, \$8.

Extra prize, a one horse mowing machine, W. H. Walbridge, Belleville, \$10.

Best combined mower and reaper, R. & R. S. Patterson, Belleville, diploma and \$20; 2d do, W. H. Walbridge, Belleville, \$12; 3d do, Collins & Osborne, Guelph, \$8.

Best field or two-horse cultivator, T. & G. Morgan, Markham, \$12; 2d do, Joshua Carlton, Toronto, \$8; 3d do, Salem Eckhardt, Unionville, \$4.

Best horse hoe, or single horse cultivator, Henry Collard, Gananoque, \$4; 2d do, George Prentice, Columbus, \$3.

Best machine for sinking field drains and laying in and covering tiles, Jas. Chase, Brooklyn, \$60.

Best portable steam engine, for agricultural purposes, 6 to 10 horse power, Thomas Zealand, Port Hope, \$50; 2d do, F. G. Beckett & Co., Hamilton, \$30; 3d do, Ganson, Watrous & Co., Brantford, \$20.

Best improved liquid manure drill, for drilling two or more rows of liquid, with turnips, mangels, &c., either on the ridge or flat, Emanuel Rocky, Salem, Co. Elgin, \$25; 2d do, James Berry, Wellington Square, \$15.

EXTR PRIZES.—One cross cut sawing machine, J. & S. Nixon, Ingersoll, \$4. Cast iron beam plough. Jos. Fleury, Aurora, \$3. Ribbing plough, do, do, do, \$2. Side hill plough, do, do, do, \$2. Grain cultivator and sower, Jas. Hamilton, Peterboro, \$3; Combined clover thresher and huller, Jos. Hall, Oshawa, \$5. Clover and Timothy seed sower, Emanuel Rocky. Salem, Elgin, \$2. Sod and subsoil plough, Whittemore, Belcher & Co., Massachusetts, \$2. Cultivator adapted for the cultivation of new land, or land encumbered with obstructions, which cannot ordinarily be ploughed, John A. Cull, Toronto, \$6.



**REMARKS BY JUDGES.**—The Judges in this class would call the attention of the Board to the fact that our field of labor is too great for us to be able to do justice to ourselves and the competitors, for the want of time. We therefore recommend that in future there shall be another set Judges for ploughs. We would also call the attention of the Board to the fact that we found the wooden and iron harrows were competing together in one section, when they should be in two distinct sections.

**CLASS XXXVI.—AGRICULTURAL TOOLS AND IMPLEMENTS, CHIEFLY FOR HAND USE.—**  
(142 Entries.)

**Judges.**—Geo. Davison, Kingston; Robert Alexander; C. Yale, St. Catherines; W. Gibbard, Napanee.

Best fanning mill, Thomas Wilson, Richmond Hill, diploma and \$6; 2d do, O. W. Everett, Dundas \$4; 3d do, Charles Bodly, Mt. Forest, \$2.

Best seed drill, or barrow, Emanuel Rockey, Salem, Elgin, \$4; 2d do, Thomas Penton Paris, \$3; 3d do, Geo. Young, Concord, \$2.

Best straw cutter, G. C. McKenzie, Georgetown, \$5; 2d do, Maxwell & Whitelaw, Paris, \$4; 3d do, Hugh McLaren, Lowville, \$3.

Best machine for cutting roots for stock, M. Cant, Galt, \$6; 2d do, John Leigh, Aurora, \$4; 3d do, Maxwell & Whitelaw, Paris, \$2.

Best cheese press, Joel Hughes, jr., Schomberg, \$8; 2d do, And. Boyle, Eden Mills, \$6.

Best churn, Jesse Kinney, Brantford, \$3; 2d do, Nathan Campbell, Stratford, \$2.

Best garden, walk, or lawn roller, H. A. Massey, Newcastle, \$4.

Best farm gate, Chris. Doner, Cashel, \$3; 2d do, Wm. Depew, Simcoe, \$2.

Best specimen farm fence, of wood, Samuel Hall, Toronto, \$3; 2d do, David Fleming, Toronto, \$2.

Best specimen wire fencing, not less than two rods, erected on the ground, W. & Thos. Walker, Brampton, \$8.

Best wooden pump, Peter Kribbs, Stouffville, \$4; 2d do, C. W. Card, Brooklin, \$3.

Best half dozen hay racks, A. P. Busseck, Stouffville, \$3; 2d do, Thomas Bryan, jr., London, \$2; 3d do, do, do, \$1.

Best half-dozen manure forks, A. S. Whiting, Oshawa, \$3.

Best half-dozen hay forks, A. S. Whiting, Oshawa, \$4.

Best ox-yoke and bows, John Baker, Waterdown, \$2; 2d do, John Ramsay, Eden Mills, \$1; 3d do, Platt Hinman, Grafton, Trans.

Best grain cradle, J. B. Lazier, Port Perry, \$2; 2d do, Richard Sylvester, Ellesmere, \$1.

Best half-dozen steel hoes, A. S. Whiting, Oshawa, \$3.

Best half dozen grass scythes, A. S. Whiting, Oshawa, \$3.

Best half-dozen cradle scythes, A. S. Whiting, Oshawa, \$3.

Best machine for making drain tiles, W. Hamilton & Son, diploma and \$30,

Best assortment of drain tiles, Thomas Nightingale, Yorkville, \$6; 2d do J. Brown, Carleton West, \$4; 3d do, John Snowball, Markham, \$2.

**EXTRA.**—Assortment of drain tiles, shown by Wm. Gibb, Yorkville, erroneously entered, and not seen by judges of this class; prize awarded by revision committee in consideration of their excellent quality, equal to first, \$6 and Diploma.

Best straw fork, of wood, Thomas Moore, Etobicoke, \$2.

Best 6 chopping axes, Ellis Burrill, Belleville, \$3.

Best set horse shoes, W. Stephenson, Nasagaweya, \$2; 2d do, W. Mahaffy, Brampton, \$1.

**EXTRA PRIZES.**—Weed cutter, Samuel Cummer, Willowdale, \$1. Separator for grain, Chappell & Sprague, Rochester, N. Y., \$3. Grain Separator, John Gartshore, Dundas, \$3. Screw tobacco press, John Thomas, Hamilton, \$2. Grain shipping cart, Wm. Smith, Toronto, \$2. Ornamental Gate, Christopher Doner, Cashel, \$2. Assortment of horse shoes of various kinds, for diseased feet, Alex. Dunbar, London, \$4. Machine for facilitating churning, Thos Head, Cope-town, \$2.

**NOTE.**—A case of edge tools, grass scythes, drawing knives, chopping axes, &c., shown by J. W. Robinson, Co. Hastings, not entered, highly commended.

**CLASS XXXVII.—PREPARED CATTLE FOOD, ARTIFICIAL MANURES, &c.—**(3 Entries.)

**Judges.**—Hugh Ross, Kingston; P. R. Palmer, Thurlow.

Best ground bones for manure, P. R. Lamb, Toronto, \$4; 2d do, do, do, \$2.

Best specimen of other artificial manure?  
Thomas Martindale, York, G. R., \$4.

## ARTS AND MANUFACTURES DEPARTMENT.

COMPETITION OPEN TO CANADIAN EXHIBITORS ONLY.

CLASS XXXVIII.—CABINET-WARE AND OTHER WOOD MANUFACTURES—(61 Entries.)

*Judges.*—George Stephens, Cobourg; George Jackson, Simcoe.

Best bed room furniture, set of, Jacques & Hay, Toronto, \$10; 2d do, do, do, \$8.

Best centre table, do, do, \$7.

Best drawing room sofa, do, do, \$7.

Best drawing room chairs, set of do, do, \$7.

Best wardrobe, do, do, \$5; 2d do, do, do, \$4.

Best Cooper's work, Coridon Lewis, Salford, \$4; 2d do, R. S. Dodd, Stratford, \$3.

Best curled hair, 10 lbs., Peter R. Lamb, Toronto, \$3; 2d do, do, do, \$2.

Best handles for tools for carpenters, blacksmiths, gunsmiths, watchmakers, &c., collection of, Thomas Moore, Etobicoke, \$8.

Best joiner's work, assortment of, Smith & Burke, Toronto, \$8.

Best machine wrought moulding and flooring, 100 feet of each, do, do, \$6.

Best turning in wood, collection of specimens, Jacques & Hay, Toronto, \$6; 2d do, Smith & Burke, Toronto, \$4.

Best veneers, from Canadian woods, W. Clements, Newbury, \$10; 2d do, T. F. Purdy & Brother, Newbury, \$6.

Best wash tubs and wooden pails, three of each, factory made, Coridon Lewis, Salford, \$4.

EXTRA PRIZES.—Ker & Brother, Streetsville, samples of jack spools and bobbins for woollen and cotton mills, \$2. P. T. Ware & Co., Toronto, three sewing machine cases, \$3. William and Thomas Walker, Brampton, washing machine, \$2. O. W. Everett, Dundas, lot of turned wooden bowls, \$2. Richmond & Walton, London, Clothes dryer, \$4. Henry Fryatt, Aurora, scrubbing machine, commended. Thomas McMurchy, Glenwilliam, Patent Mangle, \$3. John Addison, Hamilton, patent spring Mattress, Diploma. James Meyers & Son, Toronto, washing machine and wringer, \$2. Harris, Brothers, Toronto, corn brooms, \$1. Samuel Creighton, Toronto, spinning wheel, \$2.

Michael Malcolm, Toronto, Chess Boards, comm'd. Wm. Haines, Toronto, specimens of varnishing and polishing on grand piano, \$4.

CLASS XXXIX.—CARRIAGES, SLEIGHS, AND PARTS THEREOF.—(51 Entries.)

*Judges.*—James Kay, Galt; John King, St. Thomas.

Best bent shafts, half a-dozen, A. P. Bussick, Stouffville, \$3; 2d do, Abraham Efner, London, \$2.

Best buggy, double seated, C. F. Hall, Toronto, \$8; 2d do, do, do, \$6.

Best buggy, single seated, Macabe & Co., Hamilton, \$7; 2d do, C. F. Hall, Toronto, \$5.

Best carriage, two horse, pleasure, C. F. Hall, Toronto, \$12; 2d do, do, do, \$8.

Best carriage, one horse, pleasure, Macabe & Co., Hamilton, \$8; 2d do, C. F. Hall, Toronto, \$6.

Best child's carriage, John Webster, Yorkville, \$4; 2d do, Edward Colley, St. Mary's \$3.

Best hubs, two pairs of carriage, Abraham Efner, London, \$3.

Best rims or felloes, two pairs of carriage, R. McKinley & Co., St. Catharines, \$3; 2d do, Abm. Efner, London, \$2.

Best spokes, one dozen, machine made, carriage, Thos. C. Saunders, St. Catharines, \$3.

Best two horse pleasure sleigh, Hart & Son, Picton, \$10.

Best sleigh, one horse, pleasure, Samuel Lake, Newburgh, \$8; 2d do, Macabe & Co., Hamilton, \$6.

Best springs, one set of steel carriage, Isaac Briggs, Gananoque, \$4; 2d do, Moria Spring Co., Belleville, \$3; extra do, buggy springs, John Stephenson, Unionville, \$2.

Best wheels, one pair of carriage (unpainted), C. F. Hall, Toronto, \$4.

EXTRA PRIZES.—W. J. Hamilton, Homer, Lincoln, trotting buggy, \$2. Do, do, trotting sulky, \$1. R. McKinley & Co., St. Catharines, bows for carriage tops, \$1. Do, do, rails for buggy seats, \$1. Do, do, set of bent sulky felloes, \$1. Do, do, set of cutter stuff, \$1. Do, do, bent stuff and bendings for cutters, \$2. John Webster, Yorkville, Express waggon, \$3. A. P. Bussick, Stouffville, sleigh bends, \$2. Abraham Efner, London, bent cutter and sleigh stuff, \$1. C. F. Hall, Toronto, Boston chaise, \$2.



**CLASS XL.—CHEMICAL MANUFACTURES AND PREPARATIONS.—[51 Entries.]**

*Judges.*—H. Y. Hind, Toronto; Thomas J. Cottell, Woodstock; T. Mellwraith, Hamilton; W. N. Alger, Brantford.

Best Glue, 14 lbs., Peter R. Lamb, Toronto, \$3; 2d do, do, do, \$2.

Best medicinal herbs, roots and plants, native growth, Dr. D. W. Poole, Norwood, \$12; 2d do, W. Saunders, London, \$8.

Best oils, linseed and rape, and other expressed kinds, Robert Pomeroy, Toronto, \$6.

Best oil (coal, shale or rock) Petrolia Refining Co., Petrolia, \$6; 2d do, T. W. Esmonde, Toronto, \$4.

**EXTRA PRIZES.**—A. C. Walkinshaw, Toronto, blue-black writing fluid, copying ink, blue writing fluid, red writing fluid and indelible writing ink, all commended, \$3 for the assortment. Peter R. Lamb, Toronto, Neat's foot oil, \$2.

**NOTE BY JUDGES.**—The specimens of oil exhibited, both in the raw and manufactured state, are favorable samples of this new branch of industry; but as a scientific analysis of the samples produced would be of no commercial value, the Judges have awarded the prizes to the exhibitors who have shown the best assortment of oils from Canadian Petroleum.

**CLASS XLI.—DECORATIVE AND USEFUL ARTS, DRAWINGS AND DESIGNS—(91 Entries.)**

*Judges.*—John Shier, Whitby; C. Quinlan, Port Hope; Wm. Boys, Barrie.

Best carving in wood, R. E. Griffith, Toronto, \$6; 2d do, James McGee, Toronto, \$4.

Best decorative house painting, Andrew Widdowson, Toronto, \$5; 2d do, Geo. D. Lucas, do, \$3.

Best engraving on wood, with proof, Edward Roper, Hamilton, \$5; 2d do, Edward Hooper, Toronto, \$3.

Best goldsmith's work, Joseph Robinson & Co., Toronto, \$5; 2d do, Savage & Lyman, Montreal, \$5.

Best geometrical drawing of engine or Millwright work, colored, T. A. Peterson, Toronto, \$5; 2d do, Wm. Gill Toronto, \$3.

Best lithographic drawing, W. C. Chewett & Co., Toronto, \$5.

Best lithographic drawing (colored), L. Magnus, Toronto, \$6; 2d do, L. Magnus, do, \$4.

Best mantel piece, in marble, W. H. Sheppard, Toronto, \$10; 2d do, N. L. Steiner, Toronto, \$6.

Best mathematical, philosophical and surveyor's instruments, collection of, A. F. Potter, Toronto, \$15; 2d do, Geo. Mathias, do, \$10.

Best modelling in plaster, Charles Bell, Toronto, \$6; 2d do, Farrell & Duckworth, Toronto, \$4.

Best monumental tomb or headstone, Borowman & pearse, Toronto, \$6; 2d do, Robert Sheppard, do, \$4.

Best picture frame, ornamented gilt, Mr. Scott, Montreal, \$5; 2d do, Mr. Scott, do, \$3.

Best seal engraving, Thos. Wheeler, Toronto, 2d prize, \$4.

Best silversmith's work, J. G. Joseph & Co., Toronto, \$4; 2d do, Savage & Lyman, Montreal, \$3.

Best stained glass, collection of specimens, McCausland & Horwood, Toronto, \$10; 2d do, W. Bullock, Toronto, \$6.

**EXTRA PRIZES.**—Map of Canada, Tackabury, Bros., London, \$4. Dialing instrument, W. H. Sheppard, Toronto, \$5. Designs and stamps for embroidery, Wm. Williams, Toronto, \$3. Decorative sign painting George Booth, Toronto, \$5. Lithographic drawings, W. C. Chewett & Co., Toronto, \$3. Assortment of gold and silver leaf, and dentist's gold foil, C. W. Hubbard, Toronto, \$4. Map engraving and printing (map of Upper Canada) G. C., G. R. and G. M. Tremaine, Toronto, diploma and \$6. Writing on glass in gold, Geo. D. Lucas, Toronto, \$3. Dentistry, Wm. Myers, Toronto, \$4. Sign writing or gilding on glass, And. Widdowson, Toronto, \$4. Specimens of Penmanship, I. Bates, Toronto, \$5. Orr's system of writing, J. Edwards, Toronto, \$5. Case of dentistry, Cas. J. Curtis, Toronto, \$5. Natural weather indicator, L. S. Ullman, Toronto, \$3. Collection of native marbles, W. Haughey, Ottawa, highly commended, \$5.

**CLASS XLII.—FINE ARTS—(67 Entries.)**

*Judges*—W. M. Wilson, Simcoe, Norfolk; J. D. Dumble, Cobourg; H. W. Peterson, Guelph.

*Professional List—Oil.*

Best animals, grouped or single, Robert

Whale, Burford, \$12 and diploma; 2d do, W. N. Cresswell, Harpurhey, \$8.

Best historical painting, W. N. Cresswell, do., \$12; 2d do., Robert Whale, Burford, \$8.

Best landscape, Canadian subject, Robert Whale, Burford, \$12; 2d do, W. N. Cresswell, Harpurhey, \$8.

Best marine painting, Canadian subject, W. N. Cresswell, Harpurhey, \$12; 2d do, W. Armstrong, Toronto, \$8.

Best portrait, Robert Whale, Burford, \$10; 2d do, not numbered ("Indian Girl"), \$7.

#### *In Water Colours.*

Best animals, grouped or single, John H. Caddy, Hamilton, \$8; 2d do, Wm. Armstrong, Toronto, \$6.

Best flowers, grouped or single, John Griffith, London, \$8; 2d do, Miss A. F. H. Gibbon, Weston, \$6.

Best landscape, Canadian subject, John H. Caddy, Hamilton, \$8; 2d do, W. N. Cresswell, Harpurhey, \$6.

Best marine view, Canadian subject, W. Armstrong, Toronto, \$8; 2d do, W. N. Cresswell, Harpurhey, \$6.

#### *Pencil, Crayon, &c.*

Best crayon, colored, Wm. Armstrong, Toronto, \$6; 2d do, Miss Amelia F. H. Gibbon, Weston, \$4.

Best crayon, plain, do, do, \$6; 2d do, Miss Annie Bushell, London, \$4.

Best pencil drawing, J. C. Braithwaite, Toronto, \$6; 2d do, do, do, \$4.

Best pen and ink sketch, Miss Amelia F. H. Gibbon, Weston, \$6; 2d do, F. H. Verner, Toronto, \$4.

#### *Amateur List—Oil.*

Best animals, grouped or single, John Whale, Burford, \$9; 2d do, do, do, \$7; do, highly commended, Mrs. Gourlay, Hamilton.

Best historical painting, Rev. Wm. Grant, Port Perry, \$9; 2d do, Miss M. A. Evans, Toronto, \$7.

Best landscape, Canadian subject, J. Whale, Burford, \$9; 2d do, A. H. Gilmour, Toronto, \$7.

Best marine painting, Canadian subject, J. Whale, Burford, \$9; 2d do, do, do, \$7.

Best portrait, do, do, \$8; 2d do, Miss Beddome, London, \$6.

#### *In Water Colors.*

Best animals, grouped or single, F. A. Wise, Toronto, \$8; 2d do, Miss Kirkpatrick, Kingston, \$6.

Best flowers, grouped or single, M. L. Brunskill, Toronto, \$5; 2d do, James Griffiths, London, \$3; do, highly commended, M. Thompson, Toronto.

Best landscape, Canadian subject, T. D. Belfield, Grafton, \$8; 2d do, Wm. Ambrose, Hamilton, \$6; do, highly commended, Mrs. B. Walker, St. Thomas.

Best marine view, Canadian subject, T. D. Belfield, jun., Grafton, \$8; 2d do, W. Ambrose, Hamilton, \$6.

#### *Pencil, Crayon, &c.*

Best Crayon, colored, E. A. Mara, Toronto, \$5; 2d do, Miss E. J. Thompson, Toronto, \$3.

Best Crayon, plain, Miss Rowe, Whitby, \$5. 2d do. do. do., Mrs. Henry Reid, Toronto, \$3.

Best pencil drawing, Miss Maughan, Windsor St., Toronto, \$5; 2d do, do, do, \$3; extra do, James Griffith, London, \$2; highly commended, George Armitage, Toronto.

Best pen and ink sketch, Mrs. Gourlay, Hamilton, \$5; 2d do, Edward Roper, Hamilton \$3; do, extra prize, J. G. Horne, Toronto, \$2.

#### *Photography.*

Best collection of ambrotypes, Jas. Rawe, Toronto, \$7.

Best collection of photograph portraits, in duplicate, one set colored, Carl Loeffler, Toronto, \$10; 2d do, do, do, \$8.

Best collection of photograph portraits, plain, Mathews & Anderson, Toronto, \$8; 2d do, Jas. R. Hay, do, \$6.

Best collection of photograph landscapes and views, W. Armstrong, Toronto, \$9; 2d do, Mathews & Anderson, do, \$7.

Best photograph portraits in Oil, James Rawe, Toronto, \$8; 2d do, R. A. Pauling, Hamilton, \$6.

EXTRA PRIZES.—James R. Hay, Toronto, photographic visiting cards, \$4. Miss A. F. H. Gibbon, Weston, oil painting, "Lake of Lucerne, Switzerland," \$4. Miss Maughan, Toronto, water color drawing, "English Ruins," \$2. Do, do, do, "Autumn," \$2. Do, do, "Cochem on the Moselle," \$2. D. Gourlay, Toronto, stereoscope for 100 views, \$4. J. T. Carson, Toronto, ivory-



types, \$2. Do, do, Photographs re-touched in Indian ink, diploma. Wm. Armstrong, Toronto, two portraits in water colors, \$4. Do, do, series of views on lake Superior, diploma. Benoni Irwin, Newmarket, drawings in Indian ink, diploma. William Ambrose, Hamilton, composition in water colors, \$2. T. Fitzgerald, Toronto, enlarged photographs, \$3. Miss Kirkpatrick, Kingston, Ferns in India ink, \$2.

REMARKS BY JUDGES.—The Judges have found great difficulty in performing their duties in a manner satisfactory to themselves from the defective arrangement of the specimens. Many have not been seen at all. They would recommend that the persons in charge of the departments should be instructed to place sections as much as possible together. The judges have much pleasure in remarking that a decided improvement is observable in the fine arts department.

CLASS XLIII.—GROCERIES AND PROVISIONS—(77 Entries.)

*Judges.*—F. W. Fearman, Hamilton; D. McLaren, Mitchell; E. A. McNaughton, Newcastle.

Best barley, pearl, Robert King, Hamilton, \$3; 2d do, A. Mitchell, York, \$2.

Best barley, Pot, Robert King, Hamilton, \$3; 2d do, A. Mitchell, York, \$2.

Best bottled pickles, an assortment, manufactured for sale, C. B. Rowland & Co., Toronto, \$6.

Best cayenne pepper, from capsicums grown in the Province, H. Girouard, Hamilton, \$2.

Best chickory, 2 lbs., G. Pears, Toronto, \$3; 2d do, D. Crawford & Co., Toronto, \$2.

Best Indian corn meal, Robert King, Hamilton, \$3.

Best oatmeal, James Russell, Claremont Mills, \$3.

Best sauces, for table use, an assortment, manufactured for sale, C. B. Rowland & Co. Toronto, \$6.

Best soaps, collection of assorted fancy, C. Watts, Brantford, \$6; 2d do, P. Freeland & Co., Toronto, \$4.

Best starch, 12 lbs of corn, Benson & Asphden, Edinburgh, \$2.

Best starch, 12 lbs of flour, Klotz, Brothers, Preston, \$2.

Best wheat flour, Elias Snider, jun., Waterloo, \$4; 2d do, G. Wheler, Uxbridge, \$3; do. extra prize, John Kemp, Dumbarton, \$2.

EXTRA PRIZES.—Six jars preserves, Miss E. Charles, Yorkville, \$2. Split peas, James Wilson, Eden Mills, \$2. Pickling vinegar, B. E. Charlton, Hamilton, dip. Two bottles brandy, W. H. Smith & Co., Toronto, commended. Mustard, D. Crawford & Co., Toronto, commended. Ground spices, do, \$2. Keg challenge soap, W. F. Langlois, Toronto, commenced. Collection of biscuits, M. Na-smith, Toronto, \$3. Table sauces, Mrs. Jesse Thomson, Yorkville, \$2. Preserves, 12 kinds, Mrs. Jesse Thomson, Yorkville, \$2. Rock candy, M. Davis, Toronto, \$2. Collection of Biscuits, W. Christie, Toronto, diploma.

NOTE BY JUDGES.—The judges on class 43 desire to express their regret that there has not been more care taken in classifying the different articles. A great many articles that have been entered are not to be found, and others are placed in other classes; for example, wine, maple sugar, bacon, &c, in the dairy class; and no order on the table where the class is placed.

CLASS XLIV.—LADIES WORK.—(424 Entries)

*Judges.*—Mrs. R. B. Denison, Toronto; Mrs. Dr. Beatty, Cobourg; Mrs. F. W. Coate, Toronto; Mrs. J. F. Kidner, Hamilton.

Best braiding, Miss E. Eckhardt, Unionville, \$3; 2d do, Miss F. Arnoldi, Toronto, \$2.

Best crochet work, Miss J. A. Ramsey, Kingston, \$3; 2d do, Miss Bidwell, Cramahe, \$2; 3d do, Miss Annie Norton, Toronto, do, commended, Miss Isabella Hunter, Orillia.

Best embroidery in Muslin, Miss Bidwell, Cramahe, \$3; 2d do, Miss J. A. Ramsey, Kingston, \$2.

Best embroidery in silk, Mrs. J. Johnston, Toronto, \$3; 2d do, Miss Rosa Cameron, Toronto, \$2.

Best embroidery in worsted, Miss R. M. Evans, London, \$3; 2d do, Miss Beddome, London, \$2.

Best gloves, three pairs, Platt Hinman, Grafton, \$2; 2d do, Mrs. Harper, Aurora, \$1.

Best Guipure work, Miss Bidwell, Cramahe, \$3; 2d do, Mrs. J. Bates, Hamilton, \$2.

Best knitting, Mrs. Harper, Aurora, \$3; 2d do, Mrs. E. Agar, Burwick, \$2.

Best lace work, Miss Maria Matthews, Belleville, \$3; 2d do, Miss Bidwell, Crama-

he, \$2; extra do, equal to first (Limerick lace,) Miss Helen Raleigh, Toronto, \$3.

Best mittens, three pairs woollen, Platt Hinman, Grafton, \$2; 2d do, Mrs. C. Miller, Norval, \$1.

Best needle work, ornamental, Madame Griebel, Toronto, \$3; 2d do, Miss J. A. Ramsey, Kingston, \$2.

Best netting, fancy, Miss E. Strickland, Oshawa, \$3; 2d do, Miss Strickland, Oshawa, \$2.

Best plait for bonnets or hats, of Canadian straw, Mrs. Silverthorn, Toronto, \$3; 2d do, Mrs. H. Stickle, Cobourg, \$2.

Best Gentleman's shirt, Mrs. M. A. Johnston, Yorkville, \$3; 2d do, Mrs. J. T. Ewart, Woodbridge, \$2.

Best socks, three pairs woollen, Mrs. D. Christie, Utica, \$2; 2d do, Mrs. Alex. Gerrie, Dundas, \$1.

Best stockings, three pairs woollen, No. 10 (name not known,) \$2; 2d do, Mrs. A. Gerrie, Dundas, \$1.

Best tatting, Miss J. A. Ramsey, Kingston, \$3; 2d do, Miss Hettie Denison, Toronto, \$2.

Best wax fruit, Miss Sophia Graham, Streetsville, \$6; 2d do, Miss M. Lyman, Toronto, \$4.

Best wax flowers, Mrs. A. Dredge, Toronto, \$6; 2d do, a case all white [ticket, misplaced] \$4.

Best worsted work, Miss Ann Unwin, Toronto, \$3; 2d do, Miss Ann Unwin, Toronto, \$2.

Best worsted work, raised, Miss J. A. Ramsey, Kingston, \$3; 2d do, do, do, \$2.

EXTRA PRIZES.—Miss Mary Sheppard, Willowdale, hearth rug, \$2. Mrs. Harper, Aurora, knitted quilt, \$2. Miss Dover, Toronto, silk table cover, \$1. Miss Elizabeth McEvers, Cobourg, ornamental wreath in seeds, \$4. Miss Isabella Graham, Streetsville, case of wax shells, \$6 and diploma. Miss Isabella Graham, Streetsville, work in hair, \$3. Mrs. Fenwick, Markham, counterpane, \$2. Mrs. D. Howland, Hamilton, case hair jewelry, \$3. Mrs. E. Goldsmith, Toronto, knitted counterpane, \$2. Mrs. G. Wiley, Richmond Hill, hearth rug, \$1. Mrs. Wright, Toronto, wax figure of Her Majesty the Queen, \$2. Mrs. S. A. Johnstone, Yorkville, night dresses, \$1. Mrs. Wood, Toronto, tatting work, \$1. Miss M. J. Wilson, Yorkville, woollen shawl, \$1. Miss Jane Mitchell, Port Hope, transferred work, \$1.

Miss Rosa Paraday, Toronto, bead work, \$1. Miss Bidwell, Cramahe, cordon collar and cuffs, \$2. Mrs. G. Silverthorn, Toronto, straw hat and bonnet, \$1.

#### CLASS XLV.—MACHINERY, CASTINGS AND TOOLS—[78 Entries.]

*Judges.*—James Crossen, Cobourg; W. P. Phillips, Kingston; Robert McKechnie, Dundas.

Best castings for general machinery, J. Gartshore, Dundas, Wentworth, \$10.

Best castings for railways, railroad cars and locomotives, assortment of, John Gartshore, Dundas, \$15.

Best edge tools, assortment, H. H. Date, Galt, \$20.

Best pump, in metal, C. P. Hinds, Toronto, \$5; 2d do Isaac Briggs, Gananoque, \$3.

Best refrigerator, J. W. Esmonde, Toronto, \$6.

Best sewing machine, manufacturing, R. M. Wanzer & Co., Hamilton, \$10; 2d do, L. N. Soper, Woodstock, \$7; extra do, for a new improvement in sewing machines, adapting them to waxed thread, Thomas Halligan, Newmarket, diploma and \$10; do, commended, Patterson & Irwin, Belleville.

Best sewing machine, family, R. M. Wanzer & Co., Hamilton, \$10; 2d do, Patterson & Irwin, Belleville, \$7.

Best valves and gearing for working steam expansively, either in model or otherwise—principle of working to be the point of competition, William Gill, Toronto, \$12.

EXTRA PRIZES.—Fire detector and burglar alarm, Salem Eckhardt, Unionville, Diploma and \$3. Blacksmith's fire iron, Salem Eckhardt, Unionville, \$2. Hand-power loom, Miles Welsh, Brantford, \$5. Saw shingle machine, J. W. & N. Green, Watford, \$4. Wood-sawing machine, David Bruce, London, \$5. Four amalgam bells, Irwin & Sons, Uxbridge, \$5. Machine for making bats, Elisha Simkins, Toronto, \$2. Coal mining machine, Elisha Simkins, Toronto, \$2. Shingle machine, G. O. S. Conway, Ashburn, \$5. Patent fire escape, George Campbell, Toronto, \$2 and diploma. Model of a locomotive, F. A. Gardner, Hamilton, \$5. Engine beer pump, D. S. Keith, Toronto, \$3. Self-regulating steam warming apparatus, D. S. Keith, Toronto, \$8. Green house hot water boiler, D. S. Keith, Toronto, \$3. Portable gas making apparatus, D. S. Keith, Toronto, \$5. Blacksmith's Bellows,



Samuel Westman, Toronto, \$3. Smith's forge bellows, Jos. Dallyn & Sons, Hamilton, \$4. A pair of mill stones, J. Garthshore, Dundas, \$10. Bran Duster, John Gartshore, Dundas, \$8. Central discharge water wheel, John Gartshore, Dundas, \$5. Forty horsepower steam engine, not in operation, John Gartshore, Dundas, \$20. Model of improved steam engine, for working steam expansively, Thomas Northy, Hamilton, diploma and \$2. Cracker and biscuit machine, W. W. Gibson, Dundas, \$10. Coffee mill, W. W. Gibson, Dundas, \$3. Sugar mill do, do, \$2. Fire engine, W. Marks, Toronto, \$10. Branch rail for track, J. Findlay, Toronto, \$2. Shingle machine, Jas Davidson, Cobourgh, \$10. Double box loom, Jas. Davidson, Cobourgh, diploma and \$10. Washing machine, James Spring, Dorchester, \$2. Machine for making tin eave troughs, Robert Emery, Toronto, \$3. Mill stones, R. H. Oats, Toronto, \$5. Tailor's shears, Geo. & S. Rogers, Toronto, \$2. Steam guages, Joshua Lowe, Toronto, \$10 and diploma. Model of patent churn, Mrs. M. Murdoch, Port Dalhousie, \$1. Combination carriage, Mrs. M. Murdoch, Port Dalhousie, \$1. Model of iron waggon, Mrs. M. Murdoch, Port Dalhousie, \$2. Model of seed-drill, Mrs. M. Murdoch, Port Dalhousie, \$2. Improved rat-trap, J. B. Ryan, Toronto, \$1. Self-acting cattle guard, James Forest, Ontario, Co. Wentworth, \$2. Small saw mill, Aaron Scott, Dereham, \$4.

**CLASS XLVI.—METAL WORK (MISCELLANEOUS) INCLUDING STOVES—(95 Entries.)**

*Judges.*—A. K. Boomer, Toronto; John Watson, Ayr; Thos. D. Harris, Toronto.

*Miscellaneous.*

Best coal oil lamps, an assortment, Parsons Brothers, Toronto, not manufactured in Canada, diploma; 2d do, H. Piper & Brother, Toronto, not manufactured in Canada, diploma.

Best coppersmith's work, an assortment, Booth & Brother, Toronto, \$7.

Best fire arms, an assortment, W. P. Marston, Toronto, \$7; 2d do, James M. Jones, Chatham, \$5.

Best files, collection of cast steel, Andrew Hart, Hamilton, \$3.

Best fire proof office safe, J. & J. Taylor, Toronto, \$8; 2d do, do, do, \$6.

Best iron fencing and gate, ornamental, Wm. Bain, Sandwich, \$7.

Best iron work from the hammer, ornamental, Wm. Midford, Ottawa, \$6; 2d do, James Berry, Wellington Square, \$4.

Best locksmith's work, an assortment, R. J. Brown, Toronto, \$7; 2d do, J. & J. Taylor, Toronto, \$5.

Best nails, 20 lbs. of pressed, Cavan & Britton, Gananoque, \$6.

Best nails, 20 lbs cut, Cavan & Britton, Gananoque, \$6; 2d do, do, do, \$4.

Best plumber's work, an assortment, John Ritchie, Toronto, \$6; 2d do, D. S. Keith, Toronto, \$4.

Best tinsmith's lacquered work, an assortment of, Booth & Brother, Toronto, \$6.

Best wire work, an assortment of, W. H. Coe, Toronto, \$6.

*Stoves.*

Best cooking stove, for wood, with furniture, John McGee, Toronto, \$6; 2d do, do, do, \$4.

Best cooking stove, for coal, with furniture, J. G. Beard & Sons, Toronto, \$6; 2d do, do, do, \$4.

Best hall stove, for wood, John McGee, Toronto, \$5; 2d do, do, do, \$3.

Best hall stove, for coal, John McGee, Toronto, \$5; 2d do, do, do, \$3.

Best parlour stove, for wood, John McGee, Toronto, \$5; 2d do, J. G. Beard & Sons, Toronto, \$3.

Best parlour stove, for coal, J. McGee, Toronto, \$5.

**EXTRAS.**—Improved fire-place, W. H. Sheppard, Toronto, diploma. Three iron beadsteads, J. & J. Taylor, Toronto, \$5. Parlour, house safe, J. & J. Taylor, Toronto, \$3. Plumber's brass work, John Ritchie, Toronto, diploma. Engineer's brass work, John Ritchie, Toronto, \$5. Soda water fountain, T. Smith, Toronto, diploma. Soda water bottling machine, Thomas Smith, Toronto, diploma. Specimens of iron rivets, Isaac Briggs, Gananoque, diploma. A collection of saws, Morland, Watson & Co., Montreal, diploma. Pair of self-fastening skates, R. J. Brown, Toronto, diploma. Zinc window sash and eave troughs of zinc and galvanized iron, Edward Colley, St. Mary's, diploma. Steam and water engineering brass work, D. S. Keith, Toronto, diploma. Assortment of stamped copper bottoms, J. McGee, Toronto, diploma. Sample smoothing irons, Ives & Allan, Montreal, diploma. Patent door-bell, A. E. Taylor, Brockville, diploma. Railway switches, J.

Kitchen, Kingston, diploma. Laundry stove, J. G. Beard, Toronto, diploma. New and useful apparatus for economising fuel in heating rooms, applicable to open grates, E. Vernon, Hamilton, \$5 and diploma. Assortment of weights and measures, H. Piper & Brother, Toronto, \$5.

**CLASS XLVII.—MISCELLANEOUS, INCLUDING POTTERY AND INDIAN WORK—(56 Entries.)**

*Judges.*—D. B. Garton, Barrie; David Savage, Guelph.

*Miscellaneous.*

Best brushes, an assortment, Charles Boeckh, Toronto, \$6; 2d do, Alfred Green, Hamilton, \$4.

Best model of a steam vessel, Richard Osborne, Newburg, \$6.

Best model of a sailing vessel, Richard Osborne, Newburg, \$6; 2d do, Richard Osborne, Newburg, \$4.

*Pottery.*

Best filter for water, Jos. Brown, Carlton West, \$3; 2d do, F. P. Gould, Brantford, \$2.

Best pottery, an assortment, Jos. Brown, Carlton West, \$8; 2d do, Wm. Lea, York, \$5.

Best sewerage pipes, stoneware, assortment of sizes, W. & R. Campbell, Hamilton, \$10; 2d do, F. P. Gould, Brantford, \$6.

Best assortment of stoneware, F. P. Gould, Brantford, \$10.

Best slates for roofing, Benj. Walton, Toronto, \$8.

**EXTRA PRIZES.**—Artificial limbs, John Condell, Brockville, \$4. Stove-pipe conductor of artificial stone, W. H. Sheppard, Toronto, \$2. Patent canvas felt, W. D. Darlington, Toronto, \$3. Artificial limbs, Norris Black, Toronto, \$3. Lamp chimney cleaners, C. Boeckh, Toronto, \$1. Earthenware vases, John Burns, Yorkville, \$1. Specimens of Indian work, "Sox ska tien a chi," of Caughnawaga, \$3.

**CLASS XLVIII.—MUSICAL INSTRUMENTS—(31 Entries.)**

*Judges.*—G. W. Strathey, Mus. Doc. Toronto; Prof. F. W. Sofge, Toronto.

Best harmonium, R. S. Williams, Toronto, \$10; 2d do, Andrus Bros., London, \$6.

Best melodeon, R. S. Williams, Toronto, \$6; 2d do, Andrus Bros., London, \$4.

Best organ, church, Edward Lye, Toronto, \$25.

Best piano, square, John C. Fox, Kingston, \$15; 2d do, W. G. Vogt & Co., Montreal, \$10.

Best piano, grand, J. Thomas & Co., Toronto (2d prize), \$10.

Best piano (Cottage), J. Thomas & Co., Toronto (2d prize), \$6.

Best violin, Silas Coleman, Toronto, \$3; 2d do, Coridon Lewis, Salford, \$2.

**EXTRA PRIZES.**—Violin case, Silas Coleman, Toronto, \$2. Double bass, Silas Coleman, Toronto, \$3. Bass drum, R. S. Williams, Toronto, \$1. Side drum, in wood, R. S. Williams, Toronto, \$1. Do, in brass, R. S. Williams, Toronto, \$1. Finishing of piano action, C. Baker, Toronto, \$2.

**CLASS XLIX.—NATURAL HISTORY—(17 Entries.)**

*Judges.*—H. Y. Hind, Toronto; Thomas McIlwraith, Hamilton; T. J. Cottell, Woodstock; W. N. Alger, Brantford.

Best collection of stuffed birds of Canada, classified, and common and technical names attached, S. Passmore, Toronto, \$8.

Best collection of native fishes, stuffed or preserved in spirits, and common and technical names attached, Samuel Passmore, Toronto, \$8.

Best collection of native insects, classified, and common and technical names attached, Wm. Saunders, London, \$8.

Best collection of minerals of Canada, named and classified, Thomas Herrick, Toronto, \$8; 2d do, W. W. Fox, Toronto, \$6.

Best collection of native plants, arranged in their natural families, and named, T. Poole, M. D., Norwood, \$8; 2d do, Miss Kate Crooks, Hamilton, \$6.

Best collection of stuffed birds and animals of any country, Samuel Passmore, Toronto, \$8.

**EXTRAS.**—Basket of sea weed, Mrs. Mary Gall, Toronto, commended. Book of fern leaves, Mrs. Dredge, Toronto, commended. Sea weed, Mrs. Dredge, Toronto, commended as very tastefully arranged. Collection of sea Weed, Miss C. Carmichael, Toronto, commended.

**CLASS L.—PAPER, PRINTING, BOOKBINDING & TYPE.—(26 Entries.)**

*Judges.*—John Edwards, Toronto; David Wyllie, Brockville; Archibald McLachlin, & Thomas.

Best bookbinding, blank book, assortment



of, Brown Brothers, Toronto, \$5; 2d do, W. C. Chewett & Co., Toronto, \$3.

Best bookbinding, letter-press, assortment of, Brown Brothers, Toronto, diploma and \$5.

Best letter-press printing, plain, W. C. Chewett & Co., Toronto, \$5; 2d do, Geo. Brown, Toronto, \$3.

Best letter-press printing, ornamental, G. Brown, Toronto, diploma and \$5.

Best paper hangings (Canadian paper), one dozen rolls, assorted, Barber & Bros., Georgetown, diploma and \$7.

Best printing, wrapping, and writing papers, one ream of each, Buntin Bros., Toronto, \$7; 2d do, Barber Bros., Georgetown, \$5.

Best printing type, an assortment, C. T. Palsgrave, Toronto, \$7.

EXTRAS.—Paper cloth address labels, T. Hill, Toronto, \$2. Machine for cutting and Mitering printers' rules, John Fensom, Toronto, diploma. Blotting paper, colored paper and envelopes, Buntin Bros., Toronto, diploma. Assortment letter-press printing, W. C. Chewett & Co., Toronto, \$2. Bankers' cases, &c., Brown Bros., Toronto, \$2. Pocket books, wallets, &c., Brown Bros., Toronto, diploma. Embossed cloth cases, Brown Bros., Toronto, \$1. Ornamental cards, G. Brown, Toronto, commended. Plain cards, Geo. Brown, Toronto, commended. Plain posters, Geo. Brown, Toronto, commended. Ornamental posters, Geo. Brown, Toronto, diploma. Letter-press printing, varieties, G. Brown, Toronto, commended.

CLASS LI.—SADDLE, HARNESS, ENGINE HOSE, AND TRUNK MAKERS' WORK, AND LEATHER.  
(79 Entries.)

*Judges.*—Duncan McKay, Brantford; Thos. Field, Galt; H. Thompson, Waterdown.

Best engine hose and joints, 2½ inches in diameter, 50 feet of copper riveted, T. Thompson, Toronto, \$6.

Best harness, set double carriage, Marshall Porter, Bowmanville, \$8; 2d do, J. & R. Irvine, Montreal, \$6.

Best harness, set of single carriage, A. Fraser, Hamilton, \$6; 2d do, W. Steward, jun., Toronto, \$4.

Best harness, set of team, R. Malcolm, Toronto, \$5; 2d do, W. Steward, jun., Toronto, \$3.

Best saddle, lady's full quilted, W. Stew-

ard, Jun., Toronto, \$8; 2d do, Thos. Thompson, Toronto, \$6.

Best saddle, lady's quilted safe, R. M. Hinder, Toronto, \$6; 3d do, W. Steward, jun., Toronto, \$4.

Best saddle, gentleman's full quilted, T. Thompson, Toronto, \$7; 2d do, J. & R. Irvine, Montreal, \$5.

Best saddle, gentleman's plain shaftoe, W. Steward, jun., Toronto, \$5; 2d do, A. Fraser, Hamilton, \$3.

Best trunks, an assortment, H. E. Clarke, Toronto, \$8; 2d do, W. Steward, jun., Toronto, \$6.

Best valises and travelling bags, an assortment, H. E. Clarke, Toronto, \$5.

Best hames, three pair of iron cased, team or cart, Robert Malcolm, \$3.

Best hames, six pairs of wooden team, R. C. Gill, Colborne, \$3; 2d do, Robert Malcolm, Toronto, \$2.

### *Leather.*

Best belt leather, 30 lbs., R. K. Johnson, Fergus, \$3; 2d do, W. M. Macklem, Chippawa, \$2.

Best brown strap and bridle, one side of each, W. M. Macklem, Chippawa, \$3; 2d do, R. K. Johnson, Fergus, \$2.

Best carriage cover, two skins, Robinson & Flummerfelt, Markham, \$3; 2d do, R. K. Johnson, Fergus, \$2.

Best deerskins, dressed, Hy. Ferdinand, Waterloo, \$2; 2d do, Greene, DeWitt & Co., Montreal, \$1.

Best harness leather, two sides, Jos. Flack, Sandhill, \$3; 2d do, Robert Dale, Sandhill, \$2.

Best hogskins for saddles, (no first); 2d do, R. K. Johnson, Fergus, \$3.

Best patent leather, for carriage or harness work, (no first); 2d do, R. K. Johnson, Fergus, \$4.

Best skirting for saddles, two sides, W. M. Macklem, Chippawa, \$4.

EXTRA ENTRIES.—Stud bridle and roller, Marshal Porter, Bowmanville, \$2. Winker leather, R. K. Johnson, Fergus, \$2. Buff grain leather, R. K. Johnston, Fergus, \$2. Express harness, Robert Malcolm, Toronto, \$2. Sample of belting, U. A. Harvey, St. Davids, \$2. Assortment of horse collars, Robert Nicholl, Toronto, \$4. Cart harness, Robt. Malcolm, Toronto, \$2. Pair Scotch collars, Robert Malcolm, Toronto, \$2.

CLASS LII.—SHOE AND BOOT-MAKER'S WORK  
LEATHER, &C.—(78 Entries.)

*Judges*—John Sterling, Toronto; James Gow, Guelph; James F. Wright, Vienna.

Best boots, ladies, an assortment, John Sims, Toronto, \$7; 2d do, R. Nisbet & Co., Hamilton, \$5.

Best boots, gentlemen's sewed, an assortment, John Sims, Toronto, \$7; 2d do, R. Nisbet & Co., Hamilton, \$5.

Best boots, pegged, an assortment, John Sims, Toronto, \$5; 2d do, Childs & Hamilton, Toronto, \$3.

Best boot and shoemakers' lasts and trees, an assortment, W. A. Young, Dundas, \$8.

Best calf skins, W. M. Macklem, Chippewa, \$3; 2d do, Robinson & Flummerfelt, Markham, \$2.

Best calf skins, two morocco, W. M. Macklem, Chippewa, \$3; 2d do, R. K. Johnson, Fergus, \$2.

Best Cordovan, two skins of, R. K. Johnson, Fergus, \$3; 2d do, Wm. Jacques, Colborne, \$2.

Best dog skins, two dressed, Wm Jacques, Colborne, \$3; 2d do, A. McGlashan, York Mills, \$2.

Best kip skins, two sides, W. M. Macklem, Chippewa, \$3; 2d do, John Tye, Whitby, \$2.

Best patent leather, for bootmakers, 20 feet, R. K. Johnson, Fergus, \$6.

Best sole leather, two sides, Robert Garner, Drummondville, \$3; 2d do, Andrew McGlashan, York Mills, \$2.

Best upper leather, two sides, W. M. Macklem, Chippewa, \$3; 2d do, Robinson & Flummerfelt, Markham, \$2.

EXTRA PRIZES.—Black grain kip, R. K. Johnson, Fergus, \$2. Grain upper leather, W. M. Macklem, Chippewa, \$2. Assortment of shoemaker's pegs, W. A. Young, Dundas, \$2. Boot treeing machine, W. A. Young, Dundas, \$5. Crimping machine, W. A. Young, Dundas, \$5. Boston boot polishing machine, W. A. Young, Dundas, \$2. Grain dressed calf skin, Cook & Co., Yorkville, \$2. Leather leggings, Gillyatt & Copley, Toronto, \$2. Calf kid, Greene, DeWitt & Co., Montreal, \$4. Sheep kid, for gloves, Greene, DeWitt & Co., Montreal, \$2. Grained calf skin, John Tye, Whitby, \$2. Grained kip skin, John Tye, Whitby, \$2.

CLASS LIII.—WOOLLEN, FLAX AND COTTON  
GOODS; AND FURS AND WEARING APPAREL  
(155 Entries.)

*Judges*—James F. Kidner, Hamilton; Thos. Oliver, Woodstock; Joseph Manning, Brownsville.

Best bags from flax or hemp, the growth of Canada, one dozen, David Smellie, Concord, \$5.

Best bags, one dozen cotton, Joseph Wright, Dundas, \$4.

Best blankets, woollen, one pair, John Woodhull, Delaware, \$6; 2d do, Ezl. Snider, Brockville, \$4; Mrs. Geo. Bateman, Oakwood, commended.

Best carpet, woollen, one piece, E. Snider, Brockville \$8; 2d do, Reuben Lundy, Newmarket, \$6.

Best carpet, woollen stair, one piece, E. Snider, Brockville, \$6; 2d do, E. Snider, Brockville, \$4.

Best cloth, fulled, one piece, Fraser & Co., Cobourg, \$6; 2d do, J. N. Pitts, Port Dover, \$4.

Best cloth, broad, one piece, Fraser & Co., Cobourg, \$6; 2d do, Platt Hinman, Grafton, \$4.

Best counterpanes, two, John Bowman, Almira, \$5; 2d do, Hugh McMillan, Erin, \$3.

Best cordage and twines, from Canadian flax or hemp, assortment of, A. & D. McGregor, Toronto, \$10; 2d do, A. Main & Co., Hamilton, \$6.

Best check for horse collars, one piece, Ezekiel Snider, Brockville, 4s.

Best drawers, factory made, woollen, one pair, J. G. Crane, Ancaster, \$4.

Best flannel, factory made, Barber, Bros., Streetsville, \$5; 2d do, Clark & Nixon, Clarksburg, \$3.

Best flannel, not factory made, one piece, Ezekiel Snider, Brockville, \$5; 2d do, W. Forfar, Ellesmere, \$3.

Best flannel, scarlet, one piece, Barber, Brothers, Streetsville, \$5; 2d do, Barber, Brothers, Streetsville, \$3.

Best fur cap and gloves, H. Ferdinand, Waterloo, \$4.

Best fur sleigh robe, H. Ferdinand, Waterloo, \$5; 2d do, Platt Hinman, Grafton, \$3.

Best gloves and mitts of any leather, an assortment, Greene, DeWitt & Co., Montreal, \$4; 2d do, H. Ferdinand, Waterloo, \$3.



Best horse blankets, two pairs, Newbury Button, Milnesville, \$5.

Best kersey for horse clothing, one piece, H. J. Scott, Belleville, \$5; 2d do, Ez. Snider, Brockville, \$3.

Best linen goods, one piece, David Smellie, Concord, \$5.

Best winsey, checked, one piece, Elizabeth Patton, Milliken, \$3.

Best satinet black, one piece (no first); 2d do, Disher & Haight, St. Catharines, \$4.

Best satinet, mixed, one piece, Disher & Haight, St. Catharines, \$5; 2d do, Barber Bros., Streetsville, \$3.

Best shirts, factory made, three woollen, Jasper G. Crane, Ancaster, \$5.

Best silk and felt hats, Higby, Woodruff & Co., Hamilton, \$5.

Best stockings and socks, factory made woollen, three pairs each, Jasper G. Crane, Ancaster, \$4.

Best suit of clothes of Canadian cloth, Lawson & Co., Toronto and Hamilton, \$10.

Best Tweed, winter, one piece, J. N. Pitts, Port Dover, \$6; 2d do, Fraser & Co., Cobourg, \$4.

Best Tweed, summer, one piece, Barber Brothers, Streetsville, \$6; 2d do, J. N. Pitts, Port Dover, \$4.

Best twines, linen and cotton, an assortment, Alex. Main & Co. Hamilton, \$3; 2d do, A. & D. McGregor, Toronto, \$2.

Best woollen cloths, tweeds, &c., an assortment, J. N. Pitts, Port Dover, \$10; 2d do, B. & W. Rosamond, Lanark, \$6.

Best woollen shawls, stockings, drawers, shirts and mits, an assortment, J. G. Crane, Ancaster, \$10.

Best yarn, white and dyed, one pound of each, J. G. Crane, Ancaster, \$2.

Best yarn, fleecy woollen, for knitting, one pound, J. G. Crane, Ancaster, \$2.

Best yarn, cotton, Joseph Wright, Dundas, \$2.

**EXTRA ENTRIES.**—Black cassimere from merino wool, Barber Bros. Streetsville, \$4. Oxford grey, Barber Bros. Streetsville, \$4. Children's stockings, J. G. Crane, Ancaster, \$1. Overcoat of English material, Lawson & Co., Toronto and Hamilton, \$1. Overcoat of Canadian cloth, Lawson & Co., Toronto and Hamilton, \$1. Sheepskin mats, John Cooke, Toronto, \$1. Oxford doeskins, Barber Bros. Streetsville, \$3.

**NOTE BY JUDGES.**—The colours of the factory made flannels need improving. Some

of the home-made flannels to which we have not awarded prizes are very good, but the patterns are objectionable. The patterns of some of the woollen cloths and tweeds are also bad. An assortment of gentlemen's woollen scarfs from the Ontario Mills, Cobourg, is very good. A bale of factory cotton, manufactured by Gordon & McKay, is highly deserving of commendation.

#### CLASS LIV.—FOREIGN MANUFACTURES.— (39 Entries.)

**Judges.**—Dr. Beatty, Cobourg; Dr. Craigie, Hamilton.

Assortment of fishing hooks, fishing tackle, needles, &c. &c., Allcock, C. Laight & Co. Redditch, England, diploma.

Steam fire engine, Silsby, Myndesse & Co., Seneca, N. Y., diploma.

Patent saponifier, and soap manufactured therefrom, Erastus Burnham, Toronto, diploma.

Assortment of Steinway & Son's, Stodart's, and Chickering's pianos, exhibited by A. & S. Nordheimer, Toronto; commended as first class instruments of the respective manufacturers.

#### AMATEUR MUSICAL BANDS.—(2 Bands in competition.)

**Judges.**—G. M. Strathy, Mus. Doc. Toronto; Prof. F. M. Sofge, Toronto; W. L. Lawrason, London.

Best Canadian, amateur band, consisting of not less than eight performers, of whom there shall not be more than two professional artists, Cobourg brass band, \$60; 2d do, Union brass band, Toronto, \$40.

**NOTE.**—The Judges would suggest an Overture being made one of the pieces to be played in future competitions.

### Miscellaneous.

**INFLUENCE OF NATURE AS WE GROW OLDER.**  
—But there is a deeper truth than all this, in the influence which nature gains over us in proportion as life withdraws itself from struggle and contention. We are placed on earth for a certain period to fulfil, according to our several conditions and degrees of mind, those duties by which the earth's history is carried on. Desk and warehouse, factory and till, forum and senate, schools of science and arts, arms and letters, —by these we beautify and enrich our common habitation; by these we defend, bind together, exalt, the destinies of our common race. And

during this period the mind is wisely fitted less to contemplate than to act—less to repose than to toil. The great stream of worldly life needs attrition along its banks in order to maintain the law that regulates the movement of its waves. But when that period of action approaches towards its close, the soul, for which is decreed an existence beyond the uses of earth—an existence aloof from desk and warehouse, factory and till, forum and senate, schools of science and art, arms and letters,—gradually relaxes its hold of former objects, and, insensibly, perhaps, to itself, is attracted towards the divine source of all being, in the increasing witchery by which nature, distinct from man, reminds it of its independence of the the crowd from which it begins to re-emerge. And, in connection with this spiritual process, it is noticeable how intuitively in age we turn in strange fondness to all that is fresh in the earliest dawn of youth. If we never cared for little children before, we delight to see them roll in the grass over which we hobble on crutches. The grand-sire turns wearily from his middle-aged careworn son to listen with infant laugh to the prattle of an infant grandchild. It is the old who plant young trees; it is the old who are most saddened in autumn, and feel most delight in the returning spring. And, in the exquisite delicacy with which hints of the invisible eternal future are conveyed to us—may not that instinctive sympathy with which life rounds its completing circle towards the point at which it touches the circle of life winding up to meet it be a subtle intimation that, from such point of contact, youth will spring forth again? May there be no meaning more profound than the obvious interpretation, in the sacred words, "Make yourselves as little children, for of such is the kingdom of heaven?"—*Sir E. Bulwer Lytton.*

**TABLE TURNING FIFTEEN HUNDRED YEARS AGO.**—In the curious work of De l'Ancre, *L'incrédule et mescreance du Sortilege* (4to, Paris, 1622, page 236), is an account of two magicians, Patritius and Hilarius, who lived in the reign of Valens. Describing their proceedings, he says: "They prepared an enclosure of branches of laurel, in the same form as was at the tripod of Delphi. And, after having pronounced many charms, both by day and by night, they caused that a round table surrounded by this inclosure should turn itself and move (*se contournait et remuoit*) according to the matter they might require." It would occupy too much space to give the whole of the ceremonies; the result of the incantation, however, was, that the letters T. H. E. O. D. were exhibited, and said to be a portion of the name of Valens's enemy, and the emperor in consequence took care that Theodorus should not be put to death. This was the circiter A. D. 373.—*Notes and Queries.*

## SEED AND IMPLEMENT WAREHOUSE.

ESTABLISHED, 1836.

THE SUBSCRIBERS beg to inform the Farming Community and the Public generally, that they have now opened their new place of business in the

## AGRICULTURAL HALL,

AT THE

COR. OF YONGE AND QUEEN STREETS,

Where they will keep an Extensive Stock of

### FIELD AND GARDEN SEEDS,

of the best quality; and in connection with their

### Wholesale & Retail Seed Business,

They will keep in Stock a Large and Varied Assortment of the most Improved

AGRICULTURAL IMPLEMENTS, HORTICULTURAL TOOLS, and USEFUL BOOKS for FARMERS and GARDENERS.

### JAMES FLEMING & CO.,

Seedsman to the Agricultural Association of U. C.

TORONTO, Dec. 16th, 1862.

### Agricultural Implements.

|                                                  |                         |
|--------------------------------------------------|-------------------------|
| One Horse Ploughs .....                          | \$5.00 to \$ 7.00 each. |
| Two Horse Ploughs...Nos. 1, 2 & 3                | 16.50 "                 |
| " " iron beam.....                               | 12 00 "                 |
| Patterson & Brothers, Manufacturers, Belleville. |                         |
| " " wood Nos. 4 & 5                              | 10.00 "                 |
| " " " No. 6.....                                 | 16.50 "                 |
| One Horse Hoes or Cultivators....                | 8.00 "                  |
| Straw Cutters, for horse or hand                 |                         |
| power.....                                       | 30.00 "                 |

Draining Tools of Superior Quality, Spades, Shovels, Manure Forks, Potato Forks, Hay Forks, Cradles, Scythes, Snaiths, Iron Rakes, Hoes, Hand and Horse Hay Rakes, &c., &c., &c.

JAMES FLEMING & Co.

TORONTO, Dec. 16th, 1862.

### Miscellaneous Articles,

FOR SALE BY

*James Fleming & Co.*

Rustic Iron Garden Chairs, Plain and Ornamented Flower Pots, Vases, Propagating-Glasses, Fish Globes, Aquariums, Green-house Syringes, Conservatory Pumps, Water-pots with patent brass roses, Fumigators, Saynor's celebrated Pruning and Budding Knives, Bass Mats, Hedge Shears, Transplanting Trowels, Grass Shears with long handles, Thistle Spuds, Fancy Rakes and Hoes, Hatchets, Hammers, Sets of Garden Tools for Boys, Large Pruning Shears, Garden Lines and Reels, Gardener's Gloves, &c., &c., &c.



**Pure Bred Stock for Sale.**

**A**YRSHIRE BULLS, Calves, and Heifers; Improved Berkshire Pigs, and Leicester and Cotswold Rams.

R. L. DENISON,  
Dover Court, Lippincott P. O.

**FOR SALE!**

**Ayrshire Cattle, Leicester Sheep, and Berkshire Pigs.**

**T**HE Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Specimens from his *Prize Herd* will be on Exhibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.  
Aug. 30th, 1862. 6-mos.

**THE  
JOURNAL OF THE BOARD OF ARTS  
AND MANUFACTURES,  
FOR UPPER CANADA,**

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

**DUTCH FLOWER ROOTS.**

**T**HE SUBSCRIBERS BEG TO ANNOUNCE that they have just received their annual importation of Bulbs in good condition—consisting of *Double and Single Hyacinths*, \$1.00, \$2.00, and \$3.00 per dozen. A fine assortment of *Tulips*, from 50 cents to \$2.00 per dozen. *Crocus*, 12 to 20 cents per dozen, and at \$1.00 and \$1.50 per 100. *Polyanthus*, *Narcissus*, 12 to

15 cents each.

Descriptive Catalogues furnished gratis on application. They would also call attention to their fine stock of English Hyacinth Bottles, with supports, suitable for growing Hyacinths in winter, and for holding parlour bouquets in summer. (See above cut.)

**JAMES FLEMING, & Co.,**

Seedsman and Florists, Corner of Yonge and Queen Streets, Toronto

Toronto Oct. 27th, 1862

## Agricultural and Veterinary Instruction

A CLASS will be formed in Toronto for instruction in the Principles of Agriculture, and the Veterinary Art, specially adapted to the wants of young men engaged in, or intended for agricultural pursuits.—Professor Buckland will be assisted in the department of Scientific Agriculture by the Professors of Chemistry, Geology and Natural History in University College.—Mr. A. Smith, Licentiate of the Edinburgh Veterinary College, and consulting Surgeon to the Board of Agriculture for UPPER CANADA, will have charge of the Veterinary department.

The course will commence on *Wednesday, January 21st*, 1863, and continue for about six weeks. Three Lectures a day, and *no fees*.—The subjects treated of will comprise:—

The History, Breeding, Diseases, and Treatment of Farm Animals,—including their Anatomy and Physiology, with a course of instruction in Practical Dissecting.

Agriculture in its relations to Chemistry, Geology, Mechanics, Physical Geology and Meteorology, Botany and Zoology, including Farm Architecture and Engineering, the valuation and management of Landed Property, with special reference to Canada.

Pupils may enter and leave the Class without being subjected to an examination. But with a view of promoting Emulation the Board of Agriculture offer the following Prizes, the value to be given in suitable books:—First, \$20 to the Student who shall pass the best Examination in all the subjects at the end of the term; Second, \$15; Third, \$10; and Fourth, \$5.

Further particulars may be known by applying either personally or by letter to Professor Buckland, University College.

Toronto, Nov., 1862.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD  
OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

**Subscription**—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**Editors**—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Press, King Street East, Toronto.

## Contents of this Number.

|                                                                                      | PAGE. |
|--------------------------------------------------------------------------------------|-------|
| Close of the year, New arrangements,....                                             | 737   |
| Liebig's Lectures on application of Chemistry to Agriculture, <i>concluded</i> ..... | 736   |
| Commercial value of Artificial Manures..                                             | 741   |

### HORTICULTURAL :

|                                        |     |
|----------------------------------------|-----|
| Flower Garden and Pleasure Grounds.... | 743 |
|----------------------------------------|-----|

### TRANSACTIONS :

|                                                    |     |
|----------------------------------------------------|-----|
| Prize List Provincial Exhibition, <i>concluded</i> | 744 |
|----------------------------------------------------|-----|

### MISCELLANEOUS :

|                                          |     |
|------------------------------------------|-----|
| Influence of Nature as we grow older.... | 757 |
| Table Turning 1500 years ago.....        | 758 |
| EDITORIAL NOTICES, &c.                   | 758 |

## Horse Infirmary and Veterinary Establishment, Corner of Bay and Temperance Streets Toronto, C. W.

A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

And also begs to announce that Veterinary Medicines of every description are constantly kept on hand:—Such as, Physic, Diuretic, Cough Cordial, Tonic Condition, and Worm Balls and Powders. The constituents composing the Cough-balls, have been found (by Professor Dick, of Edinburgh) most serviceable in alleviating many of the symptoms of Brokenwind or Heaves in Horses. Colic Draughts, &c., a mixture which owners of Horses should always have beside them.

Liniments for Sore-throat, Sprain, Curb, Spavin, Ringbone.

Blistering Ointments. Liquid and sweating Blisters.

*Horses bought and sold on commission.*

Toronto, Aug. 30th, 1862.

## THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.















**University of Toronto  
Library**

---

**DO NOT  
REMOVE  
THE  
CARD  
FROM  
THIS  
POCKET**

---





